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PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1834.

Joseph Sabine, Esq., Vice-President, in the Chair.

Several *crania* were exhibited of the *Lion* and of the *Tiger*, forming part of the Society's Museum, on which Mr. Owen explained the distinguishing characteristics of that part of the osseous system of these two large species of *Felis*. He adverted in the first instance to those pointed out by Cuvier in the 'Ossemens Fossiles', and remarked on the first of them,—the straightness of the outline in the *Lion* from the mid-space of the postorbital processes to the end of the nasal bones, in one direction, and to the *occiput* in the other,—as not being in all cases available: the second distinction,—the flattening of the interorbital space in the *Lion* and its convexity in the *Tiger*,—he regarded as being more constant and appreciable than the one just mentioned. There is, however, a distinction which he believes has never been published, which is well marked, and which appears to be constant; for it is found to prevail throughout the whole of the skulls of these animals which he has had opportunities of examining, including ten of the *Lion*, and upwards of twenty of the *Tiger*. It consists in the prolongation backwards, in the *cranium* of the *Lion*, of the nasal processes of the maxillary bones to the same transverse line which is attained by the coronal or superior ends of the nasal bones: in the *Tiger* the nasal processes of the maxillary bones never extend nearer to the transverse plane attained by the nasal bones than ¼rd of an inch, and sometimes fall short of it by ⅓rds, terminating also broadly in a straight or angular outline, just as though the rounded and somewhat pointed ends which these processes have in the *Lion* had been cut off.

Minor differences, Mr. Owen remarked, exist in the form of the nasal aperture, which in the *Tiger* is disposed to narrow downwards, and become somewhat triangular, while in the *Lion* its

tendency is towards a square shape; in the deeper sinking, in a longitudinal depression, of the coronal extremities of the nasal bones in the *Tiger* than in the *Lion*; in the bounding of this depression above in most of the *Tigers' crania* by a small but distinct semilunar ridge, which is not found in those of the *Lion*; and in the larger comparative size, chiefly in their transverse diameter, of the infraorbital *foramina* in the *Lion*. These *foramina*, it is curious to observe, are double either on one or both sides in the only four *crania* examined of *Lions* which were known to be Asiatic, while in all the others the *foramen* was single on each side.

Specimens were exhibited of *Placunanomiæ* from the collection of Mr. Cuming, and the following Notes by Mr. Broderip respecting them were read.

Genus Placunanomia.

Since my publication of this genus in the 'Proceedings of the Committee of Science and Correspondence,' (Part II. p. 28.) Mr. Cuming has found among his stores the following three species in addition to *Plac. Cumingii*, which I have already recorded.

Placunanomia rudis. *Plac. testâ sordidè albâ, crassâ, concentricè irregulariter corrugatâ, intùs nitidè politâ: alt.* 1$\frac{7}{8}$, *long.* 1$\frac{5}{8}$, *lat.* $\frac{5}{8}$ *poll.*

Hab. in Indiâ Occidentali.

Obs. *Ostreæ edulis* speciem referens.

Mr. Cuming detected this *Placunanomia* attached to a *Spondylus croceus*.—W. J. B.

Placunanomia foliata. *Plac. testâ subdiaphanâ, subcirculari, rudi, subfoliatâ, sordidè albâ, intùs splendente; valvæ superioris medio purpureo-fusco: alt.* 1$\frac{1}{2}$, *long.* 1$\frac{5}{8}$, *lat.* $\frac{11}{12}$ *poll.*

Hab. in sinu Guayaquil Columbiæ Occidentalis. (Isle of Muerte.)

Dredged up attached to a dead *Pinna* from a bottom of sandy mud, at the depth of eleven fathoms.

The surface of the inside of the lower valve is uneven but lustrous, and of a hue somewhat approaching to golden. The inside centre of the upper valve is of a rich purple brown. The outer surface of the lower valve, which has been attached throughout its whole extent, bears a somewhat crystalline appearance; and this observation may be applied to the adhering surface of *Plac. rudis*. In the last-mentioned species this portion is comparatively small, and the eye will immediately detect it from the contrast which it affords with the dull exterior of the part which was free.—W. J. B.

Placunanomia echinata. *Plac. testâ subtumidâ, valvâ superiore seriatim echinatâ, limbo purpurascente: alt.* 1$\frac{1}{4}$, *long.* 1$\frac{1}{4}$, *lat.* $\frac{3}{4}$ *poll.*

Hab. ad Insulam Nevis.

Dredged up attached to shells, by Mr. Powers, from sandy mud at a depth of six fathoms.

The inside of the upper valve is of a shining colour, approaching to golden, and that of the lower is sometimes silvery and sometimes of a lighter shade of the colour of the inside of the upper valve.

This species varies much in shape, according to circumstances. Mr. G. B. Sowerby possesses one of an irregular ovate form. Indeed *Placunanomia*, in common with other adherent genera, varies much in shape, accommodating its external form to the surface to which its lower valve is attached. It is remarkable also for putting on the appearance of other genera or species; and this, with the extreme closeness of the adhesion of the lower valve, has been perhaps one of the causes why it has escaped the notice of zoologists. Thus, *Plac. Cumingii*, to a casual observer, looks like one of the plicated *Oysters*; *Plac. rudis* greatly resembles the *common Oyster*, *Ostrea edulis*; and *Plac. echinata* wears something of the appearance of some of the short-spined *Spondyli*.—W. J. B.

Besides the species above recorded Mr. G. B. Sowerby has kindly furnished me with an odd valve of a large species from Luçonia, beautifully iridescent internally: but as it is believed that this is identical with the fine shell sold by him to the British Museum, I leave the description of it to the officers of that institution, in whose province it is, and who are so fully capable of doing it justice.

This genus, then, appears to be widely diffused. Mr. G. B. Sowerby has some other odd valves which may prove new. I possess two or three specimens adhering to *Spondyli* from an unknown locality; but they appear to be young, and, though I am inclined to think that there is among them a new species, I wait for further information before I venture to characterize it.—W. J. B.

Mr. Owen read the following Notes on the Anatomy of the *purple-crested Touraco*, *Corythaix porphyreolopha*, Vig.

"In commencing the anatomical examination of this *Bird*, my attention was first directed to the form of the tongue. This was large, and not confined to the posterior region of the mouth, but extended to the end of the lower mandible: its *apex* was beset with a few small horny bristles directed forwards, as in the *Toucans*, *Rhamphastos*, Linn., but much less produced than in those birds. It is probable that the ripeness of fruit on which these birds feed is tested by these yielding processes. The base of the tongue was, as usual, beset with retroverted *papillæ*, and elevated into a distinct ridge, serving, as in many of the cold-blooded *ovipara*, as an *epiglottis*. The interspace between this ridge and the laryngeal aperture was very glandular. That aperture was simple and terminated posteriorly by two retroverted spines; so that it is defended in some degree against regurgitated food as well as from that which is swallowed.

"The *œsophagus* is continued down to the stomach of uniform ample width (its diameter being ⅓rds of an inch) without any dilatation or *ingluvies*, as in the true *Rasorial* birds. Its termination for about ⅓ths of an inch is occupied by the zone of gastric glands, forming the *proventriculus*, which does not deviate in capacity or course from

the rest of the gullet. The gastric follicles are simple, elongated and rather flattened. The gizzard is small and weak in its *parietes*, resembling that of the *Toucan*. Its length is 1 inch 4 lines; its greatest diameter 10 lines. The lateral tendons are distinct, and the narrower portion beyond the *pylorus* has the strongest muscular coat, which, however, does not exceed at this part ¼rd of a line in thickness.

"The capacity of a gizzard of this structure is obviously one reason why a crop or reservoir is not required: where the muscular *parietes* encroach upon the digestive cavity, so as only to allow small portions of food to enter at a time for the purpose of undergoing trituration, then a crop is as necessary to the gizzard as the hopper to a mill. It is also required in some of the most carnivorous birds to enable them to glut themselves with portions of their prey when too bulky to be borne away entire, and thus to carry off more than the true digestive cavity can contain. But in birds which, like the *Toucans*, the *Hornbills*, the *Parrots*, and the *Touracos*, live amidst abundance of nutriment, and that of easy digestion, a superadded cavity to act as a reservoir, or to submit the food to maceration previous to its entering upon the digestive process, appears unnecessary.

"The intestinal canal in the *Touraco* has a similar affinity to that of the tribes of *Birds* above mentioned, being short, ample and without *cæca*. It measured twice the length of the bird from the end of the bill to the vent. A small pyloric canal intervenes between the gizzard and *duodenum*, and opens into the latter upon a valvular prominence. The *duodenum* suddenly dilates, and has a diameter of half an inch; but I am doubtful whether this is natural, as it was, in the present instance, distended with *Tæniæ*, which had perforated it in some places, and probably caused the death of the bird. The fold of the *duodenum* is 3 inches long, including a narrow bilobed *pancreas*. The intestine gradually diminishes in diameter to within 5 inches of the *cloaca*, when it suddenly dilates, and this portion has the usual disposition and course of the *rectum* in birds.

"The liver was composed, as usual, of two lobes. There was a gall-bladder, of an elongated form, with the cystic duct continued from the end furthest from the intestine. The mode of termination of the biliary and pancreatic ducts I was unable to determine, owing to the morbid adhesions caused by the irritation of the *Tæniæ*.

"The *testes* were small. The kidneys and supra-renal glands were of the usual structure.

"From the affinity pointed out by Cuvier between the *Touraco* and the *Curassows*, I examined carefully the structure of the *trachea*, so remarkable for its convolutions in the latter family of birds. It was, however, continued straight to the inferior *larynx*, and was connected to the *furculum* only by a slight *aponeurosis*: the sterno-tracheal muscles, a single pair, were strong in proportion to the size of the bird. The rings of the *trachea* were of a flattened form, gradually diminishing in size towards the lower extremity of the tube. The lungs were of the usual form and structure, and the

air-cells apparently not extending along the neck, or beyond the abdominal cavity, except to penetrate the osseous system; but of this I cannot speak with safety, as the bird was skinned before I dissected it.

"The eye of the *Touraco* is large, measuring 7 lines in lateral diameter. The *lens* is very convex posteriorly, and its capsule is attached to a narrow *marsupium*.

"The clavicles were united, forming an *os furcatorium*; but they were extremely weak, and yielded with facility at the point of union. The keel of the *sternum* was of moderate size, its greatest depth being to the length of the *sternum* as 1 to 4. The posterior margin of the *sternum* has two notches on either side of the keel, as in the *Toucan*; the lateral ones extending along two thirds the length of the *sternum*, the mesial ones about one third.

"After this detail it is scarcely necessary to observe that in all the important points of the internal structure the *Touraco* manifests close relationship to the *Scansorial* order, and a marked deviation from the typical structure of the *Rasores*, in which the superadded lateral dilatations of the alimentary tube, the crop and *cæca*, are so largely developed.

"The same affinity is also shown in the nature of its parasitic worms,—the *Tæniæ* belonging to the species *filiformis* of Rudolphi, so remarkable for the length and tenuity of the body, and which has hitherto been met with only in the *Psittacidæ*.

"I had an opportunity in this instance of witnessing very satisfactorily the mode of generation of the *Tænia*. Many separate joints were found in the track of the intestines, which, when viewed under the lens, were seen full of *ova*. Each of these joints contained from thirty to thirty-three *ova*, of a subglobular form, and a surface rendered irregular by minute asperities. The posterior joints of the unbroken worms were similarly distended, and readily separated.

"This division of the body approximates to the fissiparous mode of generation; but as the joints are merely the capsules of the *ova*, it is more strictly analogous to the mode of generation in the *Lernææ* and *Entomostraca*."

January 28, 1834.

William Yarrell, Esq., in the Chair.

A preparation was exhibited of the stomach of *Semnopithecus Maurus*, F. Cuv., presented to the Society by G. H. Garnett, Esq. It was brought under the notice of the Meeting for the purpose of showing that there exists in that *Monkey* the extremely elongated and sacculated form of the *viscus*, which was first described by M. Otto, as occurring in *Semn. leucoprymnus*, and which was subsequently exhibited by Mr. Owen, at the Meeting of June 11, 1833, (Proceedings, Part. I. p. 74.) as obtaining also in the only two species of the genus which he had then examined, the *Semn. Entellus*, F. Cuv., and the *Semn. fascicularis*, Raffl.,—a structure which he afterwards described and figured in the 'Transactions' (vol. i. p. 65, pll. 9 and 10). Mr. Owen's impression that this remarkable modification of the stomach is a generic peculiarity, receives confirmation from its occurrence in the first previously unexamined species which has been dissected within the Society's reach since the publication of his remarks.

An extensive series of *Eulimæ*, chiefly from the collection of Mr. Cuming, was exhibited, and the following account by Mr. G. B. Sowerby of the genus and of the characters of the several species was read.

Genus EULIMA, *Risso.*

Testa turrita, acuminata, polita, anfractibus plurimis; aperturâ ovatâ, posticè acuminatâ; labio externo subincrassato, varices obsoletos frequentes, subsecundos, plerumque efformante: operculo corneo, tenui, nucleo antico.

This genus of marine *Shells* appears to be most nearly related to *Pyramidella* and *Rissoa*. A species which has been long known has had the appellation of *Turbo politus* among British Linnean writers; and a fossil species has been placed by Lamarck among the *Bulini*, under the specific name of *Bul. terebellatus*. There are two distinctly marked divisions of the genus, which are characterized by the two species above mentioned; one has a solid *columella*, and the other is deeply umbilicated. All the species are remarkable for a brilliant polish externally, and the shells are frequently slightly and somewhat irregularly twisted, apparently in consequence of the very obsolete *varices* following each other in an irregular line, principally on one side, from the *apex* toward the aperture. Several recent species are British, and the fossil species are found in the *calcaire grossier* near Paris.

* Perforatæ.

EULIMA SPLENDIDULA. *Eul. testâ acuminato-pyramidali, brunnescente, prope suturas albo castaneoque articulatâ; umbilico magno; aperturâ anticè angulatâ: long.* 1·45, *lat.* 0·6 *poll.*
Conch. Illustr., f. 7.
Hab. ad Sanctam Elenam Americæ Meridionalis.

A single specimen of this brilliant shell was dredged in sandy mud at from six to eight fathoms' depth.—G. B. S.

EULIMA MARMORATA. *Eul. testâ acuminato-pyramidali, albido brunneoque marmoratâ; anfractibus paululùm rotundatis; umbilico magno, patulo; aperturâ anticè angulatâ: long.* 0·85, *lat.* 0·4 *poll.*

Conch. Illustr., f. 8.

Hab.

A single specimen was in the collection of the late G. Humphrey. —G. B. S.

EULIMA INTERRUPTA. *Eul. testâ acuminato-pyramidali, albicante, ad varices brunneo maculatâ; umbilico mediocri; aperturâ anticè angulatâ: long.* 0·7, *lat.* 0·25 *poll.*

Conch. Illustr., f. 11.

Hab. in Americâ Centrali.

Dredged in coarse sand, at from eleven to thirteen fathoms, in the Gulf of Nocoiyo.—G. B. S.

EULIMA IMBRICATA. *Eul. testâ acuminato-pyramidali, albidâ, longitudinaliter spadiceo lineatâ; anfractibus infrà angulatis, prominentibus; umbilico parvo; aperturâ anticè angulatâ: long.* 0·8, *lat.* 0·25 *poll.*

Conch. Illustr., f. 4.

Hab. ad Sanctam Elenam Americæ Meridionalis.

Dredged in sandy mud in from six to eight fathoms.— G. B. S.

EULIMA BRUNNEA. *Eul. testâ acuminato-pyramidali, brunneâ; anfractibus rotundatis; umbilico parvo; aperturâ anticè rotundatâ: long.* 0·6, *lat.* 0·2 *poll.*

Conch. Illustr., f. 9.

Hab. ad Insulam Haynan dictam, in mare Sinensi.

Several specimens were in the late G. Humphrey's collection.— G. B. S.

** Imperforatæ.

EULIMA BREVIS. *Eul. testâ brevi, acuminatâ, hyalinâ; varicibus subsecundis; aperturâ anticè rotundatâ: long.* 0·4, *lat.* 0·15 *poll.*

Conch. Illustr., f. 15.

Hab. ad Insulas Oceani Pacifici.

Found on the *Mother-of-pearl Shells* at Lord Hood's Island.— G. B. S.

EULIMA HASTATA. *Eul. testâ breviusculâ, albâ, prope apicem testaceâ; aperturâ ovatâ, margine laterali anticâque subangulatis: long.* 0·7, *lat.* 0·2, *poll.*

Conch. Illustr., f. 10.

Hab. ad Sanctam Elenam.—G. B. S.

EULIMA MAJOR. *Eul. testâ acuminato-pyramidali, opacâ, lacteâ; labio externo subarcuato: long.* 1·6, *lat.* 0·4 *poll.*

Conch. Illustr., ff. 1. 1*. 1**.

Hab. ad Insulam Tahiti.

The largest specimen was found in coral sand on the reefs.— G. B. S.

EULIMA LABIOSA. *Eul. testâ acuminato-pyramidali, latiusculâ,*

anfractibus subrotundatis; aperturâ brevi, labio externo posticè dilatato: long. 0·7, *lat.* 0·3 *poll.*

Conch. Illustr., f. 2.

Hab. ad Insulam Annaa Oceani Pacifici.

Found in fine coral sand.—G. B. S.

EULIMA ANGLICA.

Turbo politus, *Mont., Test. Brit.* Conch. Illustr., f. 5.

EULIMA SUBANGULATA. *Eul. testâ acuminato-pyramidali, tenui, opacâ, albâ; anfractu ultimo anticè subangulato: long.* 0·7, *lat.* 0·2 *poll.*

Conch. Illustr., f. 3.

Hab. ad littora maris Indici.

A few specimens were among the late G. Humphrey's stores, labelled E. I.—G. B. S.

EULIMA PUSILLA. *Eul. testâ acuminato-pyramidali, tenui, hyalinâ, albâ; anfractibus longiusculis: long.* 0·3, *lat.* 0·05, *poll.*

Conch. Illustr., f. 6.

Hab. ad Sanctam Elenam Americæ Meridionalis.

Variat omnino fusca.—G. B. S.

EULIMA ARTICULATA. *Eul. testâ acuminato-pyramidali, albâ, fusco articulatâ et marmoratâ; anfractibus subrotundatis; varicibus subprominulis; labio externo crassiusculo: long.* 0·9, *lat.* 0·25 *poll.*

Conch. Illustr., f. 12.

Hab. ad littora Australiæ.

This species is remarkable for the dark coloration immediately anterior to each *varix*.—G. B. S.

EULIMA VARIANS. *Eul. testâ subfusiformi, acuminatâ, tenui, coloribus variâ; aperturâ oblongâ: long.* 0·5, *lat.* 0·15 *poll.*

Conch. Illustr., f. 14.

Hab. ad Xipixapi Americæ Meridionalis.

Two specimens were collected in sandy mud by Mr. Cuming, one of which is white, the other dark brown: several others were among G. Humphrey's stores, some of which are white, others are marked with brown lines and mottled.—G. B. S.

EULIMA LINEATA. *Eul. testâ fusiformi, tenui, albâ, lineis fuscis duabus spiralibus; aperturâ oblongâ: long.* 0·7, *lat.* 0·1 *poll.*

Conch. Illustr., f. 13.

Hab.

Several specimens of this were in G. Humphrey's collection, marked "Spira lineata, Weymouth, M.P.": these two last letters stand for *Musæi Portlandici*. I make no further remark, save that it appears to have been published by Da Costa under the name of *Turbo glaber*.—G. B. S.

EULIMA ACUTA. *Eul. testâ turrito-acutâ, albâ; anfractibus duodecim lævibus, suturis obsoletis; varicibus sparsis: long.* 0·4, *lat.* 0·05 *poll.*

Hab. in Americâ Centrali. (Bay of Montiji.)

Found in coarse sand at a depth of thirteen fathoms.—G. B. S.

February 11, 1834.

Joseph Sabine, Esq., Vice-President, in the Chair.

Extracts were read from a letter addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nepâl, July 13, 1833. It conveyed the thanks of the writer for the present to him on the part of the Society of an illustrative series of skins of *Birds;* and, referring to the mortality among the living *Birds* and *Quadrupeds* forwarded by him for the Society's Menagerie, it expressed a hope that a subsequent attempt would be more successful.

Portions were exhibited of the *viscera* of a *Capybara, Hydrochærus Capybara*, Erxl., taken from an individual which recently died in the Society's Menagerie. They consisted of the stomach, the enormous *cæcum*, and the *fauces*. In calling the attention of the Meeting to the latter parts, Mr. Owen availed himself of the opportunity to demonstrate the structure first observed in them by Mr. Morgan, by whom it has been described and figured in the lately published Part of the 'Linnean Transactions'. The constriction of the hinder part of the soft palate, which prevents any but minutely divided substances from passing into the *pharynx*, and which was first observed in the *Capybara*, is found in many other *Rodents*, but does not obtain in the whole of the animals of that order.

Various preparations were exhibited of the *Rhea, Rhea Americana*, Vieill., and of the *Cassowary, Casuarius Emeu*, Lath. They were brought under the notice of the Society by Mr. Martin, who, at the request of the Chairman, read his notes of the dissections of these birds. They agreed generally with the descriptions published by Sir Everard Home in the 'Philosophical Transactions.'

Mr. Martin also exhibited a preparation of aneurism of the *aorta*, obtained from a *brown Coati, Nasua fusca*, F. Cuv., sent to the Society for *post mortem* examination by J. H. Lance, Esq. He stated that this disease appeared to be rare among *Quadrupeds*, no previous instance of it having occurred to him among more than a hundred individuals of various orders which he had dissected within the last few years.

A preparation was exhibited of a young *common Macaque Monkey, Macacus cynomolgus*, LaCép., which was born at the Gardens on the morning of the 25th January, but was dead when first noticed by the keeper. It is the first instance that has occurred in the Society's Menagerie of the birth of any *Monkey* of the Old Continent.

The reading was concluded of a Paper entitled "A few Remarks

tending to illustrate the Natural History of two Annulose Genera, namely *Urania* of Fabricius and *Mygale* of Walckenäer: by W. S. MacLeay, Esq."

Adverting in the first place to the doubts which prevail among entomologists as to the true situation in nature of the genus *Urania*, Mr. MacLeay proceeds to contribute towards the elucidation of the problem, the history of one species which appears to him to be possibly new. He characterizes it as

URANIA FERNANDINÆ. *Ur. alis nigris, anticis utrinque lineis transversis auro-viridibus suprà undecim, septimâ bifidâ, subtùs sex humeralibus latis, septimâ bifidâ, octavâ longissimâ trifidâ, reliquis apicalibus filiformibus; posticis suprà fasciâ haud serratâ et lineis octo brevibus lateralibus transversis auro-viridibus.*

Exp. alarum 4—4¼ unc.

Hab. in Cubâ.

Mr. MacLeay describes in great detail the perfect insect, and points out, as far as printed descriptions and figures exhibit them, (he having at present no access to cabinets,) the marks which distinguish *Ur. Sloanus*, Godart, and *Ur. Boisduvalii*, Guér., from the Cuban species. He conceives, however, from the many variations that he discovers in it, that this insect may be merely a variety of *Ur. Sloanus*, to which species *Ur. Boisduvalii* may also possibly be referred as a small variety.

The coast of Cuba, in every open sandy part of it, is girt immediately above the coral reefs by a copse belt, close and nearly impenetrable, composed of almost one species of tree, the *sea-side Grape, Coccoloba uvifera*, Linn. At the base of this belt grow various *Euphorbiaceæ* and *Convolvuli*; and behind it the parched sand supports many sea-side shrubs, including *Palms, Cæsalpiniæ, Cacti*, &c., festooned with the flowers of *Convolvuli, Echites*, and other climbing plants: the leaves are studded with small terrestrial shells, and large sea-shells, brought from their original element by the singular *Paguri* which have usurped them, cluster round the short stunted trunks.

Among the shrubs of these sands the most interesting is *Omphalea triandra*, the *cob* or *hog-nut* of Jamaica, a Euphorbiaceous plant, but affording a most delicious and wholesome kernel: its upper leaves are large, heart-shaped, and thick, having a leathery texture and scabrous pale green surface; the young leaves and those of young plants have the same texture and colour, but differ remarkably in form, being deeply incised, with their divisions long and narrow, particularly the middle one, and all more or less dentated on the sides. On the upper side of the entire leaves of this shrub torpidly reposes during the day, under a transparent web which protects it from the powerful rays of the sun, a caterpillar, which at night becomes active and greedily strips the *Omphalea* of its foliage: this is the *larva* of *Ur. Fernandinæ*.

The egg of this insect may be found, throughout the whole of the spring, glued to the tender incised leaves of the *Omphalea*, scarcely ever more than two being attached to a single leaf: it has a pearly

lustre and a pale green colour, sometimes turning to yellow; and varies in shape from an ovate to an oblate sphæroid. A circular space on its summit is smooth, and from hence proceed about twenty-four longitudinal ribs, the intervals between which are crossed by obsolete *striæ*.

The young *larva* is of the same colour with the egg, is marked by seven longitudinal black lines of hairs, and has a dirty yellowish head. When fully grown it is cylindrical, is without hinder protuberance on the penultimate segment, and has the more usual sixteen feet: it rarely rolls itself into a ring. Its head is sessile and red, with usually nearly twenty black spots, several of which seem to be tolerably constant; the mandibles are black. The *prothorax* is velvety black, with a white dorsal line and two or three white irregular spots at the sides; but the proportion of white varies, and there is sometimes a slight red spot on the back of the segment. The body varies from pale yellowish green to a flesh colour, with five paler longitudinal lines, of which the middle one is dorsal: the false feet are somewhat paler than the body; the true feet are red. The mesothoracic segment is rarely spotted, but all the others are often marked more or less with black spots. The spiracles are usually black. Each segment is furnished with about six hairs, which are white, and nearly one fifth as long as the whole body.

The *pupa* is not at all angular, but is rather gaily coloured; it is of a yellowish brown, with the *thorax* paler and the wings darker. The head is rounded and is marked, as well as the *mesothorax*, with several black spots; on the latter these are interspersed with points: the abdominal segments are each marked transversely with numerous black linear dots. The position of the *pupa* is horizontal, in an oval cocoon composed of a loose dirty-yellow silk, (with meshes so few and so lax as to allow the inmate to be readily seen,) and spun about withered or dead leaves.

The perfect insect is truly diurnal, swift in its flight, mounting high in the air, and travelling inland for two or three leagues, where it haunts gardens in great numbers. By far the greater number, however, remain on the sea-shore, sporting about the leaves of the *Coccoloba uvifera*, unless when depositing their eggs on the *Omphalea*. Its habit of frequenting the *Coccoloba* induced Mr. MacLeay to search long in vain for its *larva* on that tree. When it alights, all the four wings are expanded horizontally, and rarely, if ever, take a vertical position.

Mr. MacLeay concludes this portion of his paper by referring to Madame Merian's description of the metamorphosis of *Ur. Leilus*, and to her figure of its *larva*; both of which he regards as unworthy of credit. He then passes to her account of a *bird-catching Spider*.

The story of a *Spider* which catches and devours birds had, Mr. MacLeay believes, its origin with Madame Merian. Oviedo, Labat, and Rochefort make no mention of any *Spider* as possessing such habits, the two latter writers going no further than the statement that in the Bermudas there exists one which makes nets of so strong a construction as to entangle small birds. Madame Merian, however,

went the length of asserting that one *Spider* not only caught, but devoured small birds; and figured the *Mygale avicularia*, Walcken., in the act of preying on a *Humming-bird*. Now the *Mygale* does not spin a net, but resides in tubes under ground, and in all its movements keeps close to the earth; while *Humming-birds* never perch except on branches. The food of *Mygale* consists of *Juli*, *Porcellionnes*, subterranean *Achetæ*, and *Blattæ*: a living *Humming-bird* and a small *Anolis*, placed in one of its tubes, were not only not eaten by the *Spider*, but the latter actually quitted its hole, which it left in possession of the intruders. The largest *Spider* of the West Indies that spins a geometrical web is the *Nephila clavipes*, Leach; and its net may perhaps, occasionally, be strong enough to arrest the smaller among the *Humming-birds*: but it is not likely that the *Spider* would eat the birds. A small species of *Sphæriodactylus*, Cuv., introduced into one of these nets, was enveloped in the usual manner by the *Spider*; but as soon as the operation was completed, the *Spider* lost no time in cutting the line and allowing her prisoner to fall to the ground. Mr. MacLeay consequently disbelieves the existence of any *bird-catching Spider*.

The Paper was accompanied throughout by numerous notes, including observations on many subjects adverted to by the author; such as the habits of the *land-Crabs* of Cuba; a description of the *grey Lizard* of the coast, apparently a species of *Agama*; &c. They also included an account of two species of *Sphæriodactylus*, Cuv., which are characterized as follows:

SPHÆRIODACTYLUS CINEREUS. *Sphær. caudâ corporis longitudine; totus cinereus, translucidus, capite flaviori, apice roseo; squamis dorsalibus punctis minutissimis nigris aspersis.*

Long. tot. 2¾ unc.

This may possibly be the *small house Lizard* of Browne's Jamaica.

SPHÆRIODACTYLUS ELEGANS. *Sphær. fasciis dorsalibus transversis nigris* 14; *capite cæruleo-cinereo, subtùs nigro-fasciato; dorso subviridi; caudâ rubrâ, corpore breviore; ventre cinereo.*

Long. tot. 1¼ unc.

Both these *Lizards* are very common in houses in Cuba, occurring among books or wherever they can find shelter. They have bright eyes, are pretty and very harmless, and come out of their corners in rainy weather, declaring war against everything in the shape of a fly or musquitoe.

The Paper was also accompanied by drawings of the egg, *larva*, and *pupa* of *Urania Fernandinæ*, which were exhibited.

February 25, 1834.

Lieut.-Col. Sykes in the Chair.

A letter was read, addressed to the Secretary by M. W. Bojer, Corr. Memb. Z.S., and dated Mauritius, Nov. 15, 1833. It referred principally to the animal from Madagascar, which was transmitted in the spring of last year to the Society by the late Mr. Telfair, and which was brought by Mr. Bennett on April 9, 1833, (Proceedings, Part I. p. 46,) under the notice of the Society as the type of a new genus, for which he proposed the name of *Cryptoprocta*, on account of its possessing an anal pouch, and being thereby distinguishable from *Paradoxurus*, F. Cuv. One of the habits of the *Cryptoprocta ferox* indicated, during the life of the animal, the existence of this pouch: when violently enraged, and it was apt to become exceedingly ferocious on the sight of a morsel of flesh, "it frequently gratified the persons present with, not an odoriferous, but a most disagreeable smell, very like that of *Mephitis*." When its voracity was not thus excited, it was "quite domesticated and extremely fond of playing with children," and ran "about the house and yard free and sprightly, eating everything." When at liberty "it lay constantly in a rolling posture;" in confinement its sleeping position was not that of the *Viverræ*, "but always on its side, or even on its back, holding with its fore-feet the small wires of its cage." "It died of epileptic fits, which tormented it for nearly three months, and during the last few days of its existence the attacks were very strong and frequent." It had lived in the Mauritius, M. Bojer states, about twenty-five months; and he feels on this account some hesitation as to the immature condition of its dentary system, inquiring whether "this period was not sufficient for its developement, or were the detention and domestication the cause of the imperfection?"

With reference to this inquiry, Mr. Bennett remarked that in the *Viverridæ* generally the replacement of the milk teeth takes place at a comparatively late period of existence, a fact recorded by Mr. Gray in the 'Proceedings of the Committee of Science and Correspondence' of this Society (Part II., p. 65), and principally insisted on as regards *Paradoxurus*, a genus most intimately allied to *Cryptoprocta*. He added, that the fits of which the animal died were not improbably occasioned by the irritation of dentition.

Mr. Bennett's account of *Cryptoprocta ferox*, with a figure of the animal, will be published in the Second Part of the Society's 'Transactions.'

The reading was commenced of a Paper, entitled "Descriptions of New Species of *Calyptræidæ*: by W. J. Broderip, Esq."; and the *Shells* described in it, chiefly obtained from the collection of

Mr. Cuming, were exhibited. The abstract of this Paper, including the characters of the new species, will be given on the completion of the reading of it.

Mr. Owen read a Paper "On the Anatomy of the *Calyptræidæ*." After referring to the account given by Cuvier of the anatomy of *Crepidula*, to that by M. Deshayes of *Calyptræa*, and to M. Lesson's of *Crepipatella*, as elucidating the general plan of organization in this family, he proceeds to describe the structure of *Calypeopsis*.

The anatomy of this genus agrees very nearly with that of the before-known genera of the family, scarcely differing, except in the comparative extent of the locomotive and respiratory systems; but Mr. Owen has been enabled to add to the labours of his predecessors an account of the *testis*, and a description of the salivary glands. The *testis* is lodged in a membranous chamber, and consists of a glandular part of a light brown colour, and of a fibrous texture when seen under the lens; though, from analogy, the apparent fibres are no doubt seminal tubes. By the side of the *testis* there is a bag, or *vesicula seminalis*, appropriated to receive the secretion, which communicates with the termination of the oviduct posterior to the *anus*; the *anus* being situated on the right side of the branchial orifice, anterior to the *testis*, which here separates it from the oviduct. Between the *testis* and the process on the right side of the neck (regarded by Cuvier as the *penis*,) Mr. Owen has been unable to trace any communication: he feels, consequently, convinced that if this process forms part of the male generative system, it is to be regarded rather as an exciting than an intromittent organ. The salivary apparatus consists of two elongated follicles with glandular *parietes*, occupying the neck on either side of the *œsophagus*, anterior to the nervous collar, and opening into the *œsophagus* on each side of the base of the lingual plate.

After passing in review the several systems, Mr. Owen concludes by remarking on the internal chamber or cup which exists in the shells of this family. He regards it as being necessitated by the greater extent of the locomotive powers in *Calyptræa* than in *Patella*; a calcareous plate being interposed between the *viscera* and the foot to protect them from the pressure to which they would otherwise be exposed during the comparatively extensive and frequent contractions of the latter organ. As respiration has a direct relation to locomotion, the *Calyptræidæ* approach towards the higher marine univalves in the organs dedicated to that function. Throughout the family the extent of the respiratory *lamina* is found to correspond with the extent of the internal shell, and with the extent and organization of the foot.

Numerous specimens were exhibited of *Birds* collected in North America, principally in the United States, by George Folliott, Esq., and presented by him to the Society. At the request of the Chairman, Mr. Gould brought them severally under the notice of the Meeting. His principal object being to illustrate, so far as these

birds were concerned, the geographical distribution of allied or identical species, he directed his observations chiefly to the determination of those North American Birds which seemed to him to be referrible to European species, and of those which, having been generally considered as identical with European, appeared, on direct comparison, to present differences in form and colouring.

The *common Turnstone* of Europe, *Strepsilas collaris*, Temm., appears to be not only identical with the *Turnstone* of North America, but to be spread, without any tangible variation, over almost every portion of the globe. The *Sanderling*, *Calidris arenaria*, Temm., and the *Knot*, *Tringa Canutus*, Linn., are also identical in both continents; as is the *great white Heron* or *Egret*, *Ardea Egretta*, Temm. The *common Tern* or *Sea-Swallow* of England, *Sterna Hirundo*, Linn., occurs equally in North America. The *common Crow*, *Corvus Corone*, Linn., is also identical in both continents.

With respect to the *Whimbrel*, *Numenius phæopus*, Temm., and the *little Sandpiper*, *Tringa Temminckii*, Mr. Gould stated himself to be unable to determine as to their identity without the comparison of more specimens from America than he had yet been able to obtain for the purpose of examination.

The *Cross-bill* of North America Mr. Gould showed to be very distinct from that of Europe, the *Loxia curvirostra*, Linn.; it is one third less in all its proportions, and is somewhat less brilliant in colouring. The *Ring Dottrel* of North America is also specifically distinct from that of Europe, the *Charadrius Hiaticula*, Linn.; independently of differences in admeasurement, its semipalmated foot will always serve to distinguish it.

In addition to the *Birds* that have been already mentioned, Mr. Folliott's collection contained a series of the *Sylviadæ* of the United States, several *Fly-catchers*, the *Orphea rufa*, &c., &c.

Mr. Gray exhibited specimens of the shelly covering of a *Radiated* animal, allied to the *Echinidæ* and the *Asteriidæ*, which he regarded as the type of a new genus, and for which he proposed the name of

GANYMEDA.

Corpus hemisphæricum, depressum; depressione dorsi centrali quadrangulari.

Os inferum, centrale.

Anus nullus.

Ambulacra nulla.

"The body is hemispherical, depressed, thin, chalky and hollow.

"The back is rounded, rather depressed, flattened behind, with a rather sunk quadrangular central space.

"The sides are covered with sunken angular cavities with a small round ring, having an oblong transverse subcentral hole in their base.

"The under side is small, rather concave, with five slight sloping elevations from the angles of the mouth to the angles of the rather pentagonal margin. The edge is simple.

"The mouth is central. The vent none.

"The cavity is simple.

"The *parietes* are thin and minutely dotted, and the centre of the dorsal disc is pellucid.

"This genus is very nearly allied to the fossil described by Dr. Goldfuss in his beautiful work on Petrifactions, under the name of *Glenotremites paradoxus* (tab. 49. f. 9. and t. 51. f. 1.), with which it agrees in external appearance and form, in the possession of a sunken space on its upper surface, and in having only a single inferior pentagonal mouth. It differs from *Glenotremites* by being unfurnished with *ambulacra* running from the angle of the mouth to the margin, by being unprovided with conical cavities between those near the mouth, and by having in the flattened disc on the back a central quadrangular impression instead of the pentagonal star of that genus.

"Dr. Goldfuss describes the glenoid cavities on the surface as giving attachment to spines similar to those of the *Turban Echini*, (*Cidaris*, Lam.), and states that the under surface is covered with very small tubercles to which he believes spines were attached. The cavities on the surface of *Ganymeda* and the pits in them have very much the form of those figured by Dr. Goldfuss in his fossil, but I cannot regard them as being fitted for the attachment of spines: they have much more resemblance to the mouths of cells. So great, indeed, is this resemblance, that I entertained doubts whether the whole mass might not be a congeries of cells like the *Lunulites*, rather than the case of a single body, until I considered that it was impossible, from its form, that it could increase in size with the growth of the animal, and that its exceeding regularity proved that it must be the formation of a single creature.

"I am induced to consider these two genera, though differing in the above-stated particulars, as forming a family or order between the *Echinidæ* and the *Asteriidæ*; allied to the latter in having only a single opening to the digestive canal, and agreeing with the former in form and consistence, but differing from it in not being composed of many plates.

"I only know two specimens of this genus, which I believe were found on the coast of Kent, as I discovered them mixed with a quantity of *Discopora Patina* which I collected several years ago from *fuci* and shells on that coast. The specimens are ¼ of an inch in diameter.

"I propose to call the species *Ganymeda pulchella*."

March 11, 1834.

William Spence, Esq., in the Chair.

Specimens and drawings were exhibited of a *freshwater Tortoise*, forming part of the collection of Mr. Bell, by whom it was described as the type of a new genus, for which he proposed the name of

CYCLEMYS.

Sternum latum, testam dorsalem longitudine ferè æquans, integrum, solidum; testæ dorsali ligamento squamato connexum.

CYCLEMYS ORBICULATA. *Cycl. testâ suborbiculari, carinatâ, posticè dentatâ, fuscâ; scutis sterni flavescentibus, fusco radiatim lineatis.*
Long. *dorsi*, 8 unc.; lat. 7; alt. 3.
Emys orbiculata, *Bell.*
Pullus. Emys Dhor, *Gray, Syn. Rept.*, p. 20.?
Hab. in Indiâ.

Mr. Bell regards the *Tortoise* which he has thus characterized as supplying a link in the connecting series of the *land* with the *freshwater* families which has hitherto been wanting; and as especially valuable in the natural arrangement, by the clue which it furnishes to the correct location of the Indian forms of the genus *Emys*. It is, indeed, most nearly related to *Emys spinosa*, and on a superficial observation might almost be referred to that species; but on closer examination it is found to differ from that *Tortoise*, not only specifically, but generically also: its sternal bones are permanently separated from the dorsal ones, with which they are connected by means of a ligament alone, similar to that which performs the same office in *Terrapene*. From the *Box-Tortoises*, however, to which, in this point of its structure, it is so closely related, *Cyclemys* is altogether distinct, the whole of its *sternum* being entire, instead of having, as is invariably the case in *Terrapene*, one or more transverse divisions of the *sternum* itself, the lobes of which move as on a hinge. In *Terr. Europæa* this mobility of the *sternum* exists in each lobe in a small degree, combined with the ligamentous connexion of the sternal to the dorsal bones. In *Cyclemys* the whole *sternum* moves together, though very slightly.

The transition from the *land* to the *freshwater Tortoises* may consequently be regarded as commencing in *Terrapene*; passing through *Terr. Europæa* to *Cyclemys orbiculata*; and thence through the Indian forms of *Emys*, which so closely resemble the latter species, to the other forms of *Emys*: the natural series of connexion between the *Testudinidæ* and the *Emydidæ* being thus completed.

The exhibition was resumed of the new species of *Shells* contained in the collection of Mr. Cuming. Those now exhibited were accom-

panied by characters by Mr. G. B. Sowerby, and consisted of species and varieties additional to those previously characterized by Mr. Broderip, (Proceedings, Part I. p. 52.) of the

Genus Conus.

Conus Algoensis. *Con. testâ tenuiusculâ, subcylindraceâ, lævi, fuscâ, fasciâ unicâ seu fasciis duabus interruptis albis; spirâ brevi, subrotundatâ, albo fuscoque articulatâ: long.* 1·15, *lat.* 0·55 *poll.*

Hab. ad littora Africæ Meridionalis.

Found on the sands at Algoa Bay.—G. B. S.

Conus Aulicus.

Var. roseus. *Testâ formâ et staturâ* Con. Aulico *omninò simillimâ, maculis irregulariter subtrigonis, roseis.*

Hab. ad Insulam Annaa.

This, the most beautiful variety of *Con. Aulicus*, is found on the coral reefs around the Island of Annaa or Chain Island.—G. B. S.

Conus Nussatella.

Var. tenuis. *Testâ tenui, albâ, flavicante nebulatâ, punctulis fuscis transversè seriatim dispositis; striis transversis tenuissimis.*

Hab. ad Insulam Annaa.

Found on the coral reefs.

This variety differs in being more slender, much thinner, more produced at the spiral end, and wider anteriorly, from the ordinary variety. Its transverse *striæ* are, moreover, very fine, and its brown specks much more distant and regular.—G. B. S.

Conus tendineus.

Var. granulosus. *Testâ formâ et staturâ omninò* Con. tendinei, *striis transversis confertis granulosis.*

Hab. ad Insulam Annaa.

Found on the coral reefs.—G. B. S.

Conus Luzonicus.

Var. Testâ formâ et staturâ omninò Con. Luzonici, *fusco-nigricante, fasciâ interruptâ medianâ cærulescente-albidâ, anticè albido variâ.*

Hab. ad Insulas Gallapagos.

Found in the clefts of rocks at low water.

A specimen of the more usual variety, which accompanies these, shows the *epidermis*.—G. B. S.

Conus brunneus, Wood. *Con. testâ turbinatâ, crassâ, coronatâ, fuscâ, maculis albis transversè fasciatim dispositis; spirâ subprominulâ, albo fuscoque maculatâ, spiraliter sulcatâ, tuberculis magnis; basi lineis elevatis, subgranosis: long.* 1·8, *lat.* 1· *poll.*

Wood, Suppl. pl. 3. f. 1.

Variat testâ crassiore, totâ fuscâ, immaculatâ.

Hab. ad Insulas Gallapagos, ad Puertam Portreram et ad Panamam.

Found in the clefts of rocks.—G. B. S.

Conus pulchellus. *Con. testâ oblongo-turbinatâ, coronatâ, albicante roseo tinctâ ; supernè turgidulâ, infrà granoso-lineatâ ; punctulis nonnullis fusco-nigricantibus sparsis ; aperturâ intùs carneâ : long.* 1·5, *lat.* 0·8 *poll.*
Hab. ad littora occidentalia Australiæ.
From Freemantle.—G. B. S.

Conus Diadema. *Con. testâ turbinatâ, lævi, crassâ, coronatâ, fuscâ, fasciâ angustâ medianâ pallidiore ; spirâ subdepressâ, tuberculis magnis, albis ; apice mucronato ; basi lineis elevatiusculis nonnullis ; aperturâ intùs purpureo-albicante : long.* 1·7, *lat.* 1· *poll.*
Hab. ad Insulas Gallapagos.
Found in the clefts of the rocks at low water.—G. B. S.

Conus ferrugatus. *Con. testâ acuminato-conicâ, lævi, albâ, maculis longitudinalibus punctisque seriatim dispositis ferrugineis ; spirâ subacuminatâ, albâ, ferrugineo maculatâ ; basi sulcatâ : long.* 1·7, *lat.* 0·8 *poll.*
Hab. ad Sinum Californiæ et apud Insulam Guaymas.
This differs much from *Con. monilifer* in its proportions.—G. B. S.

Conus Regalitatis. *Con. testâ turbinatâ, lævi, crassiusculâ, supernè ventricosâ, spadiceâ, maculis punctulisque albo-cœrulescentibus variâ ; spirâ depressiusculâ, spiraliter sulcatâ ; basi lineis elevatiusculis paucis, subrugosis : long.* 2·, *lat.* 1·1 *poll.*
Hab. ad littora Americæ Centralis. (Real Llejos.)
Found in the clefts of rocks on sandy mud.
It may be designated *Real Llejos* or *Royalty Cone.*—G. B. S.

A specimen was exhibited of the *Musk Duck* of New Holland, *Hydrobates lobatus*, Temm. It had recently been presented to the Society by Lieut. Breton, R.N., Corr. Memb. Z. S., who entered into some particulars respecting its habits. He stated that these birds are so extremely rare, that he saw only three of them during his various excursions, which extended over twelve hundred miles of country. He has never heard of any instance in which more than two were seen together. They are met with only on the rivers, and in pools left in the otherwise dry beds of streams. It is extremely difficult to shoot them, on account of the readiness with which they dive; the instant the trigger is drawn, the bird is under water.

Some observations by Dr. Hancock on the *Lantern-fly* and other *Insects* of Guiana were read.

The writer concurs with M. Richard and M. Sieber in regarding as erroneous the statement of Madame Merian, that the *Lantern-fly*, *Fulgora lanternaria*, Linn., exhibits at night a brilliant light, and remarks that the whole of the native tribes of Guiana agree in treating this story as fabulous : it seems to be an invention of Europeans desirous of assigning a use to the singular diaphanous projection, resembling a horn lantern, in front of the head of the insect. He also states that the *Fulgoræ* rarely sing.

The insect whose song is most frequently heard in Guiana is the *Cicada clarisona*, the *Aria-aria* of the Indians, and *Razor-grinder* of the Colonists: in the cool shade of the forests it may be heard at almost every hour of the day; but in Georgetown its song commences as the sun disappears below the horizon. At Georgetown this *Cicada* was never heard in 1804, when Dr. Hancock first visited the place; but it is now very common, probably in consequence of the shelter afforded by the growth of many trees and shrubs in the gardens which have since been formed there. The sound emitted by it is "a long, continuous, shrill tone, which might be compared almost to that of a clarionet, and is little interrupted, except occasionally by some vibrating undulations."

March 25, 1834.

William Yarrell, Esq., in the Chair.

A specimen was exhibited of an *Albatross* presented to the Society by Lieut. Breton, Corr. Memb. Z. S., whose principal object in calling the attention of the Society to it was to mention that, being unprovided at the time at which the bird was killed with any of the ordinary preserving powder or soap, he had used for its preservation a mixture of Cayenne and black peppers with snuff and salt. The skin, well rubbed with this mixture, was brought through the intertropical regions in an ordinary trunk, affording free access to insects, and arrived in England uninjured. Lieut. Breton conceives that it may be advantageous to collectors to be made aware that the preservation of skins can be secured by articles so constantly at hand as those which he employed in this instance.

The exhibition was resumed of the new species of *Shells* forming part of the collection made by Mr. Cuming on the western coast of South America, and among the islands of the South Pacific Ocean. Those brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby, and consisted of five species of the

Genus Gastrochæna.

Gastrochæna ovata. *Gast. testâ ovatâ, albicante, longitudinaliter striatâ, striis exilibus, lamellosis, formam marginis semper sequentibus ; longitudine lateris antici quintam partem testæ æquante : long.* 1·2, *lat.* 0·7, *alt.* 0·7 *poll.*

Hab. in Sinu Panamensi (Isle of Perico,) et ad Insulam Platæ.

Found in *Spondyli* at the Isle of Perico, and in coral rocks, at a depth of seventeen fathoms, at the Island of Plata.—G. B. S.

Gastrochæna truncata. *Gast. testâ oblongâ, posticè rotundato-truncatâ, striatâ, sordidè albicante ; epidermide tenui lamellosâ posticè tectâ ; latere antico brevissimo, subacuminato : long.* 1·4, *lat.* 0·7, *alt.* 0·7 *poll.*

Hab. in Sinu Panamensi. (Isle of Perico.)

Found in *Spondyli.*—G. B. S.

Gastrochæna brevis. *Gast. testâ breviter ovatâ, tenui, pellucidâ, striatâ, striis exilissimis ; longitudine lateris antici octavam partem testæ æquante : long.* 0·8, *lat.* 0·5, *alt.* 0·5 *poll.*

Hab. ad Insulas Gallapagos et apud Insulam Lord Hood's dictam.

Found in *Pearl oysters* in from three to seven fathoms.—G. B. S.

GASTROCHÆNA RUGULOSA. *Gast. testâ oblongâ, albidâ, striatâ, rugulosâ, striis anticis prope marginem hiantem confertis, acutis; hiatu longissimo: long.* 0·8, *lat.* 0·3, *alt.* 0·4 *poll.*
Hab. ad Insulas Gallapagos et apud Insulam Lord Hood's dictam.
Found with the last.—G. B. S.

GASTROCHÆNA HYALINA. *Gast. testâ ovali, albidâ, hyalinâ, lævi, dorso longitudinaliter striato; latere antico brevi; hiatu duos trientes testæ æquante: long.* 0·55, *lat.* 0·25, *alt.* 0·3 *poll.*
Hab. ad Insulam Lord Hood's dictam.
Found with the two last.—G. B. S.

A Note was read from Mr. Gray, giving an account of the arrival in England of two living specimens of *Cerithium armatum*, which had been obtained at the Mauritius, and had been brought from thence in a dry state. That the inhabitants of *land Shells* will remain alive without moisture for many months is well known: he had had occasion to observe that various marine *Mollusca* will also retain life in a state of torpidity for a considerable time, some facts in illustration of which he had communicated at a recent Meeting of the Society (Proceedings, Part I., p. 116.): the present instance included, however, a torpidity of so long a continuance as to induce him to mention it particularly. The animal, though deeply contracted within the shell, was apparently healthy, and beautifully coloured. It emitted a considerable quantity of bright green fluid, which stained paper of a grass green colour: it also coloured two or three ounces of pure water. This green solution, after standing for twelve hours in a stoppered bottle, became purplish at the upper part; but the paper retained its green colour though exposed to the atmosphere.

The Secretary mentioned an instance of the arrival in this country of a living *Cerithium Telescopium*, Brug., brought from Calcutta, in company with some small *Paludinæ*, which also reached England alive: these *Mollusca* were, however, kept in sea water frequently changed. The *Cerithium* was placed by Mr. G. B. Sowerby, for dissection, in the hands of the Rev. M. J. Berkeley and G. H. Hoffman, Esq., who have prepared a paper on its anatomy for the forthcoming No. of the 'Zoological Journal': it will be illustrated by a series of figures, which were exhibited to the Meeting. It is worthy of remark, that the spirit in which this animal was immersed for the purpose of killing it, and in which it was kept for some weeks, became of a dark verdigris colour.

Dr. Weatherhead exhibited two young *Ornithorhynchi* preserved in spirit, which he had recently received from New Holland, and stated his intention of presenting one of them to the Society's Museum. The smallest of them is about two inches in length; the largest about four. Both are destitute of hair; and in both the eye-lids are closed. In the smaller one there is a vestige of an umbilical slit.

The larger of the two is one of those which were kept in captivity, with their dam, by Lieut. the Hon. Lauderdale Maule, as noticed in a communication read at the Meeting of the Committee of Science and Correspondence of this Society on September 11, 1832, (Proceedings, Part II. p. 145). With it was exhibited the dried skin of the dam, to which the mammary glands, largely developed, had been left adhering.

A Note from Lieut. Breton, Corr. Memb. Z. S., was read, giving an account of an *Echidna*, which lived with him for some time in New Holland, and survived a part of the voyage to England. The animal was captured by him on the Blue Mountains: it is now very uncommon in the colony of New South Wales. He regards it as being of its size the strongest quadruped in existence. It burrows readily, but he knows not to what depth.

Previously to embarkation this individual was fed on ant-eggs and milk, and when on board its diet was egg chopped small with liver and meat. It drank much water. Its mode of eating was very curious, the tongue being used at some times in the manner of that of the *Chamæleon*, and at others in that in which a mower uses his scythe, the tongue being curved laterally, and the food, as it were, swept into the mouth: there seemed to be an adhesive substance on the tongue, by which the food was drawn in. The animal died suddenly off Cape Horn, while the vessel was amidst the ice; perhaps in consequence of the cold, but not improbably on account of the eggs with which it was fed being extremely bad.

Lieut. Breton agrees with MM. Quoy and Gaimard in believing that little difficulty would be experienced in bringing alive to Europe the *Echidna* or *Porcupine Ant-eater* of New Holland. He suggests the following plan.

Previously to embarkation the animal should gradually be weaned from its natural food of ants, which may be done with great facility by giving it occasionally ants and ant-eggs, (the last is, in fact, more properly speaking, its common food,) but more generally milk, with eggs chopped very small, or egg alone. When on board ship it should be kept in a deep box, with strong bars over the top, and a door. It is requisite that the box or cage be deep, because the animal constantly tries its utmost to escape; and possessing very great strength, is liable to injure itself in its exertions to force its way through the bars. The effluvia arising from its excrement are so extremely fetid, that it cannot be kept altogether in a cabin, unless the cage be frequently cleaned. While this is being done, the *Echidna* may be allowed its liberty, but must be narrowly watched, or it will certainly go overboard. It is absolutely necessary that the eggs which are to constitute its food during the voyage be as fresh as possible: they can be preserved in lime water. If milk is not to be procured, water must be supplied daily; and egg and liver (or fresh meat) cut small, should be given at least every alternate day; but, when the weather will permit, it should be fed once a day. Half an egg (boiled hard) and the

liver of a fowl or other bird will suffice for a meal. Finally, the animal should be kept warm, and well supplied with clean straw. It will be as well to nail two or three pieces of wood (battens) across the floor of the cage, to prevent the animal from slipping about when the ship is unsteady.

April 8, 1834.

Dr. Marshall Hall in the Chair.

A Letter was read, addressed to the Secretary by John Hearne, Esq., Corr. Memb. Z. S., dated Port au Prince, Feb. 15, 1834. It accompanied a present to the Society of a pair of the *common Goats* of Hayti; referred to various *Birds* which it is the intention of the writer to forward when the season is more advanced; and gave some particulars of a bird known in the island by the name of the *Musicien*, respecting which Mr. Hearne hopes to obtain, in the course of a journey which he projects into the higher lands of the interior, more full information than he at present possesses.

Some extracts were read from a Letter, addressed to Mr. Yarrell by Dr. A. Smith, Corr. Memb. Z. S., dated Cape Town, Jan. 12, 1834. It refers to the projected expedition from the Cape of Good Hope into the interior of Africa, which it is the intention of the writer to accompany. It is designed to proceed directly northward from Latakoo; and Dr. Smith anticipates in this new field numerous additions to his Zoological stores: along the eastern and western coasts he has already penetrated to a considerable distance. Speaking of the *Rodentia*, so numerous in Southern Africa, he mentions as collected by him, in his late visit to Port Natal and the Zoola country, a second species of his genus *Dendromys*. He also notices a new species of *Chrysochloris* obtained by him in the same country.

At the request of the Chairman, Mr. Gould exhibited an extensive series of *Birds* of the genus *Trogon*, Linn., comprising twenty-five species. The greater number of them form part of the Society's Museum, and the others were derived from his own collection.

He pointed out the distinguishing marks of the two sections of the genus, one of which is confined to America, while the other inhabits the Old Continent. He also pointed out among the species exhibited there which he regarded as hitherto undescribed; these he named and characterized as follows:

Trogon erythrocephalus. *Trog. capite guttureque sordidè sanguineis, hoc posticè strigâ albâ obsoletâ cincto; pectore ventreque coccineis; dorso tectricibusque caudæ superioribus arenaceo-castaneis; scapularibus alæque tectricibus majoribus nigro alboque flexuosim strigatis.*

Fœm. *Capite guttureque arenaceo-brunneis; torque albo magis quam in mare conspicuo; scapularibus nigro brunneoque strigatis.*

Rostrum brunneum; *mandibularum basis regioque ophthalmica* nuda coccineæ.

Long. tot. 12 vel 13 unc.; *alæ*, 5.

Hab. apud Rangoon.

Trogon Malabaricus. *Trog. capite, gutture, pectoreque fuliginoso-nigris, hoc torque lato albo; ventre coccineo; dorso tectricibusque caudæ superioribus sordidè arenaceo-brunneis; scapularibus tectricibusque alæ majoribus nigro alboque flexuosim strigatis.*

Fœm. *Capite, dorso, gutture, pectoreque sordidè brunneis; ventre luteo; pectore haud torquato; scapularibus nigro brunneoque strigatis.*

Rostrum nigrum; *mandibularum basis regioque ophthalmica* nuda cœruleæ.

Long. tot. 11 vel 11½ unc.; *alæ*, 5.

Hab. ad littus Malabar dictum.

In both these birds the quill-feathers are black, edged with white; the three outer tail-feathers on each side black at their base and broadly white at their tips; and the two middle tail-feathers tipped with black, their remaining portion being of a chestnut brown, which in *Trog. erythrocephalus* is deep, and in *Trog. Malabaricus* light.

Trogon elegans. *Trog. vertice, genis, guttureque nigris; cervice, dorso, pectoreque metallicè aureo-viridibus, hoc posticè torque albo cincto; ventre saturatè coccineo; scapularibus alæque tectricibus albo nigrescenti-brunneoque minutissimè flexuosim strigatis, pogoniis externis lineâ albâ longitudinali notatis.*

Fœm. *Capite, pectore, dorsoque saturatè brunnescenti-griseis; torque albo obsoleto; ventre quam in mari pallidiore.*

Rostrum saturatè aurantio-luteum.

Long. tot. 12 unc.; *alæ*, 5; *caudæ*, 7.

Hab. apud Guatimala, in Mexico.

The tail is considerably lengthened in the male, and its four middle feathers are bronzed green on the upper surface, and deeply marked with black at the tip; the three outer feathers are white at the tip, and barred to a great extent on their outer edges with alternate lines of black and white, a marking which appears also, though less extensively, on their inner edges, the remainder being black: in some specimens this marking of the tail is reduced to an irregular and minute sort of dotting, in place of the bars. In the female the middle tail-feathers are of a dull chestnut, tipped with black, and the three outer feathers much resemble those of the male, but are less decidedly dotted, assuming rather a freckled appearance.

Mr. Bennett briefly recapitulated the facts and reasonings which have from time to time been brought before the Society on the subject of the abdominal glands of the *Monotremata*, regarded by Meckel and by Mr. Owen as mammary, and by M. Geoffroy-Saint Hilaire as connected with a peculiar function, to which, however, different results have been attributed by that learned zoologist at various times. The object of the recapitulation was to introduce an abstract of a recent Memoir by M. Geoffroy-Saint-Hilaire, "On the structure and use of the Monotrematic glands, and particularly on those glands in the *Cetacea*." In this Memoir the author regards the mammary glands of the *Cetacea*, so analogous in structure to those of *Ornitho-*

rhynchus and *Echidna*, as having a function similar to that which he has attributed to these latter: he assumes that the fluid secreted by them is not milk but mucus, and that this mucus is not sucked by the young, (whose organs of deglutition he describes as being unfitted for sucking,) but is ejected by the mother into the water, the element in which they dwell, where, by imbibition of a portion of the water, it becomes thickened, and, floating by the mother's side, is devoured by the progeny.

M. Geoffroy has subsequently changed his opinion as to the nature of the fluid secreted by the nutrient glands of the *Cetacea*. He had had an opportunity of examining these glands in some *Porpoises*, and had found the secretion to be actually milk. He still, however, maintains that the young of the *Cetacea* do not suck, but that the mother ejects the nutritious fluid from the milk receptacle into the mouth of her young.

April 22, 1834.

Joseph Sabine, Esq., Vice-President, in the Chair.

Some Notes by J. B. Harvey, Esq., Corr. Memb. Z. S., were read: they accompanied a collection of *Shells* and *Crustacea* made by the writer on the coast of Devonshire, near Teignmouth. The several specimens were exhibited.

Among them were numerous individuals of *Cypræa Pediculus*, *Cyp. bullata*, and *Cyp. Arctica*. Of the former there are two varieties, one spotted and the other without spots. The spotted variety, Mr. Harvey states, is generally smaller than the plain one, and is less produced on one side near the *apex*.

Cyp. bullata is found in the same localities as *Cyp. Pediculus*, but it may be doubted whether it is the young of that species: it is so comparatively rare, that Mr. Harvey has dredged up only six specimens of it, while he has collected more than a hundred of *Cyp. Pediculus*: he possesses, moreover, young individuals of *Cyp. Pediculus* of smaller size than specimens of *Cyp. bullata*. In the latter the whorls are more produced at the *apex*, and the shell is so delicate as to be broken by even a slight fall.

On *Cyp. Arctica* Mr. Harvey remarks, that although its size and appearance are in favour of its being a young shell, he hesitates in referring it to the immature condition of the unspotted *Cyp. Pediculus*: his principal ground for doubt is the extreme rarity of *Cyp. Arctica*. He inquires, however, whether the young animal may not, perhaps, live deeply imbedded in the sand for a certain period before it comes to the surface, and thus generally elude the search of the conchologist until its shell becomes matured?

With the *Shells* Mr. Harvey had transmitted to the Society living specimens of *Caryophyllia Smithii*, Brod., the *Torbay Madrepore*, whose habits were described by Mr. De la Beche in the 'Zoological Journal' a few years since: these individuals died on the journey. They are attainable only at the lowest spring tides. They may be kept alive in sea water, changed every second or third day, by feeding them with a very small piece of fresh fish scraped, and deposited with a quill upon the animal, by which it is sucked in in a manner exactly similar to that of *Polypi*. The colours of some individuals are very vivid; and among these green, blue, and blueish grey are the most predominant. Adhering to the *Caryophyllia* is occasionally found the *Pyrgoma Anglicum*, Leach, which appears to occur in no other situation.

At the request of the Chairman, Mr. Thompson of Belfast exhibited an immature specimen of the *long-tailed Manis*, *Manis tetradactyla*, Linn., for the purpose of showing that when very young,

(the present specimen being but ten inches in length,) the animal is as thoroughly armed, both with respect to scales and spines, as the full-grown one. The specimen was also considered by Mr. Thompson as interesting on account of its locality, it having been obtained in Sierra Leone.

Mr. Thompson also read the following notice of the *Cuckoo, Cuculus canorus*, Linn., copied from his Journal, under the date of 28th May, 1833.

" On examination of three cuckoos to-day, which were killed in the counties of Tyrone and Antrim within the last week, I found them all to be in different stages of plumage: one was mature; another (a female) exhibited on the sides of the neck and breast the reddish-coloured markings of the young bird, the remainder of the plumage being that of maturity; the third specimen had reddish markings disposed entirely over it, much resembling the plumage described by M. Temminck as assumed by 'les jeunes tels qu'ils emigrent en automne', (Man. d'Orn, tom. 1. p. 383), but having a greater proportion of red, especially on the tail coverts, than is specified in his description of the bird at that age. This individual proved, on dissection, to be a female, and did not contain any eggs so large as ordinary sized peas. The stomach, with the exception of the presence of some small sharp gravel, was entirely empty, and was closely coated over with hair."

Attention was called to the stomach of one of these birds, that the hair with which it is lined might be observed. From its close adhesion to the inner surface of the stomach, and from the regularity with which it is arranged, Mr. Thompson was at first disposed to consider this hair as being of spontaneous growth; but part of the stomach having been subjected to maceration in water, and afterwards viewed through a microscope of high power, the hairs proved, to the entire satisfaction of Mr. Owen and himself, to be altogether borrowed from the *larvæ* of the *Tiger-moth, Arctia Caja*, Schrank, the only species found in the stomach of the bird in various specimens from different parts of the country which were examined by Mr. Thompson in the months of May and June, 1833.

Mr. Thompson also read a Catalogue, with incidental notices, of *Birds* new to the Irish Fauna. He prefaced his list by remarking that he did not bring them forward as unrecorded, without having previously consulted every work in which he was aware that the birds of Ireland are either particularly described or incidentally noticed; including the Statistical Surveys of the Irish counties, which contain, in several instances, Catalogues of the Birds that have been observed in them.

The Catalogue is as follows:

1. *Alpine Swift, Cypselus alpinus*, Temm. By the 'Dublin Penny Journal' of March 30, 1833, my attention was directed to a *rara avis*, said to have been killed at Rathfarnham, and preserved in the fine collection of birds belonging to Thomas W. Warren, Esq. On calling to

see this bird (its species not having been ascertained,) I found it to be the *Alpine Swift*, which has not before been recorded as obtained in any part of Ireland; the specimen recognised as the *Cypselus alpinus* by my friend, William Sinclair, Esq., and communicated by him to Mr. Selby for insertion in the British Fauna, having been met with off Cape Clear, at the distance of some miles from land.

Mr. Warren's specimen was received by him on the 14th of March, and was then in a perfectly fresh state.

2. *Redstart, Phœnicura Ruticilla*, Swains. This species is recorded on the excellent authority of Robert Ball, Esq., of Dublin, who has, in the autumnal months, shot several of them in the vicinity of Youghal, co. Cork.

3. *Bearded Titmouse, Parus biarmicus*, Linn. Mr. William S. Wall, Bird Preserver, Dublin, who is very conversant with British Birds, assures me that he received a specimen of this species from the neighbourhood of the river Shannon a few years since.

4. *Rock Pipit, Anthus aquaticus*, Bechst. Common about the rocks, &c., on the seashore, in the North of Ireland.

5. *Crested Purple Heron, Ardea purpurea*, Linn. Of this bird there is a fine specimen in mature plumage in the collection of Mr. Warren, which I am assured was shot at Carrickmacross.

6. *Little Bittern, Botaurus minutus*. A specimen of this bird, shot in the county of Armagh, is preserved in the cabinet of William Sinclair, Esq., Belfast. Specimens have also been obtained in the east and south of Ireland.

7. *Night Heron, Nycticorax Europæus*, Steph. Of this bird I saw a specimen a few weeks since in the shop of Mr. Glennen, Bird Preserver, Dublin, which he informed me was sent him in a fresh state from Letterkenny, early in the present year.

8. * *Spoonbill, Platalea leucorodia*, Linn. Mr. Ball informs me, that in the autumn of 1829, three of these birds were seen in company near Youghal, and that one of them was shot. It was preserved by Dr. Green of that town, and is at present in his possession.

9. * *Green Sandpiper, Totanus ochropus*, Temm. Of this bird I have seen Irish specimens in several collections.

10. *Dottrel, Charadrius morinellus*, Linn. A specimen of this bird, which was shot near Downpatrick a few years ago, is preserved in the house of Mr. Reid, at Ballygowan Bridge (Down).

11. *Black-winged Stilt, Himantopus melanopterus*, Meyer. In the winter of 1823, a bird of this species was seen by Mr. Ball in the neighbourhood of Youghal.

12. *Gadwall, Chauliodus strepera*, Swains. Dr. Robert Graves of Dublin informed me that a specimen of this bird which I saw in his collection was shot at Wexford.

13. *Smew, Mergus albellus*, Linn. Of this bird I have seen specimens from different parts of Ireland.

14. *Little Auk, Mergulus melanoleucos*, Ray. There is a specimen of this bird in the collection of Dr. Graves, which was shot at Wexford.

15. * *Black Tern, Sterna nigra*, Linn. Mr. Ball has seen this bird in the month of July, for some years successively, at Roxborough, near Middleton, co. Cork.

In addition to these I may mention the

16. * *Blackcap Warbler, Curruca atricapilla*, Bechst., which, though stated in Rutty's Dublin to be frequent in that county, admits of some doubt, as more than one species is commonly called by the name of *Blackcap* in Ireland. On the 1st March, 1834, I saw, in the shop of Mr. Galbraith, Bird Preserver, Belfast, a fresh specimen of an adult male *Blackcap*, which had been killed (probably the day before) in the garden at Down and Connor House, co. of Down.

Other individuals of the species marked thus * have been recorded in the MS. Catalogue of the late J. Templeton, Esq.—W. T.

Mr. Thompson also stated that specimens of the true *Lestris parasiticus*, Temm., have repeatedly occurred in the Bays of Dublin and Belfast. He added, that during the great storm which took place on the 31st August, 1833, a great many specimens of the *Octopus octopodia* (which had not before been recorded as occurring on the shores of Ireland) were thrown ashore in Belfast Bay.

Mr. Owen read a Paper "On the Structure of the Heart of the *Perennibranchiate Amphibia*, or *Reptiles douteux* of Cuvier."

He briefly noticed the progressive discoveries relating to the heart of *Reptiles* which have been made since the time of Linnæus, and which have successively rendered inapplicable to the *Saurians, Cheloni-ans*, and *Ophidians*, the phrase "Cor uniloculare, uniauritum", applied to the whole of the *Reptilia* in the '*Systema Naturæ*'. He alluded to the researches of Dr. Davy and M. Martin St. Ange on the structure of the heart in the *Caducibranchiate Amphibia*, from which it appeared that two auricles were appended to the ventricle in those *Reptiles*, as well as in the higher orders above mentioned. He then proceeded to give the results of an examination of the hearts of specimens of *Amphiuma*, Cuv., *Menopoma*, Harlan, *Proteus*, Schreib., and *Siren*, Linn. He selected the heart of the *Siren lacertina* as the subject of detailed description, considering that the genus *Siren*, in combining with persistent external *branchiæ* a limited number of extremities, exhibits the simplest form of the *Amphibious Reptile*.

The heart in this species consists of three distinct cavities, as in the higher *Reptilia*, viz. of two auricles and one ventricle. The auricles appear to form externally one large and remarkably fimbriated cavity, situated behind, and advancing forwards, on both sides of the ventricle and *bulbus arteriosus*. The venous blood is poured into a large membranous sinus by one posterior and two anterior *venæ cavæ* prior to passing into the auricle. The conjoined trunk of the pulmonary veins appears also to enter this sinus, but it passes through without communicating with that cavity, and terminates in a small separate auricle, which opens into the ventricle by an orifice distinct from, but close to, the orifice of the right auricle. In the ventricle a rudimentary *septum* was noticed as affording an indication of a type of forma-

tion superior to that of *Fishes*. In the *bulbus arteriosus* a longitudinal projection appears as a commencing division of the single artery, which is given off from the ventricle.

The differences in the structure of the preceding parts, and in the origin and distribution of the different vessels exhibited by the other genera of *Perennibranchiata*, were successively noticed; and the affinities indicated by these modifications to the *Caducibranchiate Reptiles* on the one hand, and to the *Cartilaginous Fishes* on the other, were also pointed out.

The Paper was illustrated by drawings of the structures described in it.

May 13, 1834.

Richard Owen, Esq., in the Chair.

A Note was read from Mrs. Barnes, in which it was stated that that lady had brought up from the nest two of the smallest species of Jamaica *Humming-birds*. They were so tame, that at a call they would fly to her, and perch upon her finger. Their food was sugar and water. During the passage to England one of them was killed by the cage in which they were kept being thrown down in a storm; its companion drooped immediately, and died shortly afterwards.

It was remarked that injury to the bird in consequence of such an accident might be prevented by the introduction of a gauze-net screen into the cage, at some little distance within the wires.

Specimens were exhibited of several *Mammalia* from India, which had recently been presented to the Society by Lord Fitzroy Somerset. They were brought under the notice of the Meeting by Mr. Bennett, who called particular attention to the skin of a *Paradoxurus*, which he regarded as that of *Par. prehensilis*, Gray, a species hitherto known only by a drawing of Dr. Hamilton's preserved in the East India House.

The general colour of the animal is a pale greyish brown, in which longer black hairs are sparingly intermixed on the sides. On the back of the head and neck, and along the middle line of the back, these black hairs are almost the only ones that are visible. On the loins they form three indistinct black bands, of which the lateral are in some measure interrupted. The head is brownish, with the usual grey mark both above and below the eyes, and there are some short grey hairs between the eyes and across the forehead. The limbs are brownish black, rather darker towards their upper part. The tail, at its base, is of the same colour as the back, and rapidly becomes black; its terminal fifth is yellowish white. The ears are rather large, and sparingly covered with short brownish hairs.

Specimens were exhibited of three species of *horned Pheasants*, including the *Tragopan Temminckii*, Gray. In illustration of the history of the latter bird, Mr. G. Bennett, Corr. Memb. Z.S., placed upon the table drawings of specimens observed by him at Macao, and showing the remarkable wattle in various degrees of development. He also read a note on the subject.

In its contracted state the membrane has merely the appearance of a purple skin under the lower mandible; and it is even sometimes so much diminished in size as to be quite invisible. It becomes developed during the early spring months or pairing season of the year,

from January to March, when it is capable of being displayed or contracted at the will of the bird. During excitement it is enlarged, falls over the breast, and exhibits the most brilliant colours, principally of a vivid purple, with bright red and green spots: the colours vary in intensity according to the degree of excitement. When they are most brilliant, or, in other words, when the excitement is great, the purple horns are usually elevated. The living specimens seen by Mr. G. Bennett were procured from the province of Yunnan, bordering on Thibet. Mr. Beale, in whose aviary at Macao they were, had not succeeded in obtaining females of this race. Its Chinese name is *Tu Xou Nieu*.

Mr. G. Bennett also read a note on the habits of the *King Penguin*, *Aptenodytes Patachonica*, Gmel., as observed by him on various occasions when in high southern latitudes. He described particularly a colony of these birds, which covers an extent of thirty or forty acres, at the north end of Macquarrie Island, in the South Pacific Ocean. The number of *Penguins* collected together in this spot is immense, but it would be almost impossible to guess at it with any near approach to truth, as, during the whole of the day and night, 30,000 or 40,000 of them are continually landing, and an equal number going to sea. They are arranged, when on shore, in as compact a manner and in as regular ranks as a regiment of soldiers; and are classed with the greatest order, the young birds being in one situation, the moulting birds in another, the sitting hens in a third, the clean birds in a fourth, &c.; and so strictly do birds in similar condition congregate, that should a bird that is moulting intrude itself among those which are clean, it is immediately ejected from among them.

The females hatch the eggs by keeping them close between their thighs; and, if approached during the time of incubation, move away, carrying the eggs with them. At this time the male bird goes to sea and collects food for the female, which becomes very fat. After the young is hatched, both parents go to sea, and bring home food for it; it soon becomes so fat as scarcely to be able to walk, the old birds getting very thin. They sit quite upright in their roosting-places, and walk in the erect position until they arrive at the beach, when they throw themselves on their breasts, in order to encounter the very heavy sea met with at their landing-place.

Although the appearance of *Penguins* generally indicates the neighbourhood of land, Mr. G. Bennett cited several instances of their occurrence at a considerable distance from any known land.

The Secretary announced the recent addition to the Menagerie of the *Perdix sphenura*, Gray; the *Philippine Quail*, *Coturnix Sinensis*, Cuv.; and the *Hemipodius Dussumieri*, Temm.?: all presented to the Society by John Russel Reeves, Esq., of Canton. He added, that a second male specimen of the *Reeves's Pheasant*, *Phasianus veneratus*, Temm., had also been sent to the Menagerie by John Reeves, Esq. A pair of the middle tail-feathers of the last-named bird, measuring upwards of five feet in length, and presented by Wm. Craggs, Esq., were exhibited.

Numerous specimens were exhibited from Mr. Cuming's collection, in illustration of a Paper by Mr. Broderip, entitled, "Descriptions of several New Species of *Calyptræidæ*."

The new species described in this paper are distributed and characterized as follows:

Subgenus Calyptræa.

Testa subconica, subacuminata, cyathi basi adhærente, lateribus liberis.

a. Cyatho integro.

Calyptræa rudis. *Cal. testâ fuscâ, subdepressâ, suborbiculari, radiatim corrugatâ, limbo crenato; cyatho concentricè lineato, albido, irregulariter subcirculari; epidermide subfuscâ: diam. 2 poll. circiter, alt.* $\frac{7}{10}$.

Hab. ad Panamam et Real Llejos.

This species, whose white onyx-like cup, adhering only by its base, shows to great advantage against the ruddy brown which is the general colour of the inside of the protecting shell, was found under stones. The young shells are the flattest and most regular in form, but their inside is generally of a dirty white, dimly spotted with brown.—W. J. B.

β. Cyatho hemiconico, longitudinaliter quasi diviso. (Calyptræa, *Less.*)

Calyptræa corrugata. *Cal. testâ subalbidâ, suborbiculari, subdepressâ, corrugatâ; intùs nitente; cyatho concentricè lineato, producto; epidermide fuscâ: diam.* $1\frac{1}{2}$ *poll. circ., alt.* $\frac{8}{10}$.

Hab. in Americâ Centrali. (Guacomayo.)

Found under stones at a depth of fourteen fathoms.—W. J. B.

Calyptræa varia. *Cal. testâ albidâ, suborbiculari, crassiusculâ, longitudinaliter creberrimè striatâ; cyatho concentricè lineato, crassiusculo, producto: diam.* $1\frac{1}{2}$, *alt. max.* $\frac{7}{8}$, *alt. min.* $\frac{5}{8}$ *poll.*

Hab. in Oceano Pacifico. (Lord Hood's Island, the Gallapagos, and the Island of Muerte in the Bay of Guayaquil.)

This is a very variable species allied to *Cal. equestris*, and taking almost every shape which a *Calyptræa* can assume. It differs in thickness according to localities and circumstances.—W. J. B.

Calyptræa cepacea. *Cal. testâ albâ, suborbiculari, subconcavâ, tenui, diaphanâ, striis numerosis subcorrugatâ; intùs nitente; cyathi terminationibus lanceolatis: long.* $1\frac{1}{10}$, *lat.* $1\frac{1}{4}$, *alt.* $\frac{3}{4}$ *poll.*

Hab. in sinu Guayaquil. (Island of Muerte.)

This was dredged up, adhering to dead shells, from sandy mud, at a depth of eleven fathoms. Besides other differences, the terminating points of the divided *cyathus* are much more lanceolate than they are in *Cal. varia*.—W. J. B.

Calyptræa cornea. *Cal. testâ suborbiculari, complanatâ, albidâ, subdiaphanâ, concentricè lineatâ et radiatim striatâ; intùs nitente: diam.* $\frac{5}{8}$, *alt.* $\frac{1}{4}$ *poll.*

Hab. ad Aricam Peruviæ.

Dredged up from sandy mud at a depth of nine fathoms.—W. J. B.

Subgenus CALYPEOPSIS, *Less.*

Cyatho interno integro, lateraliter adhærente.

CALYPTRÆA RADIATA. *Cal. testâ conico-orbiculari, albidâ fusco radiatâ, striis longitudinalibus crebris; limbo crenulato; apice acuto, subrecurvo; cyatho depresso: diam.* 1, *alt.* $\frac{6}{17}$ *poll.*

Hab. in Americâ Meridionali. (Bay of Caraccas.)

The cup of this pretty species is pressed in, as it were, on one side, and adheres to the shell not only by its *apex*, but also by a lateral seam, which scarcely reaches to the rim of the cup. The *apex* of the younger specimens, both externally and internally, is generally of a rich brown, and there can be little doubt that when first produced they are entirely of that colour.

Found in sandy mud, on dead shells, at a depth of from seven to eight fathoms.—W. J. B.

CALYPTRÆA IMBRICATA. *Cal. testâ albidâ, crassâ, subconicâ, ovatâ, costis longitudinalibus et squamis transversis imbricatâ; apice subincurvo, acuto; limbo crenato; cyatho depresso: diam.* 1, *lat.* $\frac{5}{8}$, *alt.* $\frac{5}{8}$ *poll.*

Hab. ad Panamam.

Found on stones, in sandy mud, at a depth of from six to ten fathoms.—W. J. B.

CALYPTRÆA LIGNARIA. *Cal. testâ crassâ, fuscâ, deformi, striis corrugatâ; apice prominente subadunco, acuto, posteriore: long.* $1\frac{5}{16}$, *lat.* $\frac{5}{8}$, *alt.* $\frac{1}{2}$ *poll.*

Hab. in Americâ Centrali. (Real Llejos.)

The majority of individuals of this species have their shells so deformed that they set description at defiance: the comparatively well-formed shell occurs so rarely that it may be almost considered as the exception to the rule. When in this last-mentioned state, the circumference of the shell is an irregular, somewhat rounded oval, and it rises into a shape somewhat resembling the back of *Ancylus*, with the *apex* very sharp and inclining downwards. The shell in this shape is generally less corrugated than it is in deformed individuals, though some of those are comparatively smooth; but in both states the shell is striated immediately under the *apex*, and is for the most part corrugated on the other side of it.

Found under stones.

Var. α. Enormiter conica, cyatho valdè profundo.

This variety is often one inch and six eighths in height, and its cup nearly one inch deep, while the diameter of the shell at the aperture does not exceed one inch.

Found on shells at the Island of Chiloe, in sandy mud, at the depth of four fathoms.—W. J. B.

CALYPTRÆA TENUIS. *Cal. testâ irregulari, tenui, subdiaphanâ, creberrimè striatâ, albidâ interdum fusco pallidè strigatâ: diam.* 1 *circ., alt.* $\frac{9}{17}$ *poll.*

Hab. ad Peruviæ oras. (Samanco Bay.)

Found on living shells, in muddy sand, at a depth of nine fathoms. —W. J. B.

CALYPTRÆA HISPIDA. *Cal. testâ subovatâ, subconicâ, albâ strigis maculisque subpurpureo-fuscis variâ, striis frequentibus et spinis tubularibus erectis hispidâ; limbo crenulato; apice turbinato; cyatho subdepresso: diam.* $\frac{1}{4}\frac{9}{2}$, *lat.* $\frac{8}{12}$, *alt.* $\frac{3}{10}$ *poll.*

Hab. ad Insulam Muerte. (Bay of Guayaquil.)

This elegant species, the circumference of whose somewhat depressed cup is free, with the exception of one part where it adheres laterally, was found on dead shells, in sandy mud, at a depth of twelve fathoms.—W. J. B.

CALYPTRÆA MACULATA. *Cal. testâ ovatâ, albidâ purpureo-fusco maculatâ, longitudinaliter rugosâ; limbo serrato; apice subturbinato, subincurvo: diam.* $\frac{1}{1}\frac{1}{2}$, *lat.* $\frac{7}{10}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Muerte.

The external contour of this shell, more especially in the position of the subturbinated *apex*, much resembles that of *Ancylus*. The circumference of the cup is free, excepting at one point, where it adheres laterally throughout its length.

Found in sandy mud, on dead shells, at a depth of eleven fathoms. —W. J. B.

CALYPTRÆA SERRATA. *Cal. testâ suborbiculari, albâ subpurpureo vel fusco interdum fucatâ vel strigatâ, costis longitudinalibus prominentibus rugosis; limbo serrato; apice subturbinato; cyatho valdè depresso: diam.* $\frac{1}{2}$, *lat.* $\frac{5}{12}$, *alt.* $\frac{2}{12}$ *poll.*

Hab. ad Real Llejos et Muerte.

Var. testâ albâ.

Found on dead shells, in a muddy bottom, at the depth of from six to eleven fathoms.—W. J. B.

Subgenus SYPHOPATELLA, *Less.?*

Laminâ internâ subtrigonâ, subcirculari, latere dextro replicato.

CALYPTRÆA SORDIDA. *Cal. testâ subconicâ, sordidè luteâ, longitudinaliter subradiatâ; apice turbinato; cyatho depresso, subtrigono, haud profundo: diam.* $\frac{1}{2}$, *lat.* $\frac{5}{12}$, *alt.* $\frac{2}{10}$ *poll.*

Hab. ad Panamam.

This species, the inside and outside of which are of a sordid yellow, is generally covered externally with coral or other marine adhesions. The plate is spoon-shaped.

Found on stones, on a sandy bottom, at depth of twelve fathoms.—W. J. B.

CALYPTRÆA UNGUIS. *Cal. testâ tenui, conicâ, corrugatâ, fuscâ; apice subturbinato; cyatho depresso, subtrigono: diam.* $\frac{4}{12}$, *alt.* $\frac{2}{10}$ *poll.*

Hab. ad Valparaiso.

The plate is spoon-shaped, but not so shallow as that of *Cal. sordida.*

Found on shells, at a depth of from seven to forty-five fathoms.—W. J. B.

CALYPTRÆA LICHEN. *Cal. testâ albidâ, interdum pallidè fusco*

sparsâ, subdiaphanâ, subturbinatâ, orbiculatâ, complanatâ: diam. ⅛, alt. ¼ poll.

Hab. ad Insulam Muerte.

Found on dead shells, in sandy mud, at a depth of eleven fathoms. —W. J. B.

CALYPTRÆA MAMILLARIS. *Cal. testâ albidâ, subconicâ; apice subpurpureo, mamillare: diam.* $\frac{6}{10}$, *alt.* $\frac{4}{10}$ *poll.*

Hab. ad Insulam Muerte.

This pretty species varies. It is sometimes milk white, with the mamillary *apex* of a brownish purple, and with the inside sometimes of that colour, sometimes white, and sometimes yellowish. In other individuals the white is mottled with purplish brown stripes and spots.

Found on dead shells, in sandy mud, at a depth of eleven fathoms. —W. J. B.

CALYPTRÆA STRIATA. *Cal. testâ sordidè albâ, suborbiculatâ, subconicâ, subturbinatâ, striis longitudinalibus elevatis creberrimis corrugatâ; intùs fusco-flavescente: diam.* $\frac{1}{2}$, *alt.* $\frac{3}{10}$ *poll.*

Hab. ad Valparaiso.

Found on shells in sandy mud, at a depth of from forty-five to sixty fathoms.

CALYPTRÆA CONICA. *Cal. testâ conicâ, fuscâ albido maculatâ, subturbinatâ: diam.* 1⅛, *alt.* $\frac{7}{10}$ *poll.*

Hab. ad Xipixapi et ad Salango.

Found attached to shells in deep water.

Subgenus CREPIPATELLA, *Less.*

Laminâ rotundatâ, apice laterali et subterminali.

CALYPTRÆA FOLIACEA. *Cal. testâ suborbiculari, albidâ, foliaceâ; intùs castaneâ vel albâ castaneo varid: diam.* 1, *alt.* ⅜ *poll.*

Hab. ad Aricam Peruviæ, saxis adhærens.

This *Crepipatella*, which bears no remote resemblance to the upper valve of some of the *Chamæ* when viewed from above, was found on exposed rocks near the shore.—W. J. B.

CALYPTRÆA DORSATA. *Cal. testâ subalbidâ, planiusculâ, costis longitudinalibus irregularibus rugosâ; intùs medio fusco-violaceâ: diam.* ⅜, *lat.* ¼ *poll.*

Hab. ad Sanctam Elenam.

The back of this shell is not unlike the upper valve of some of the *Terebratulæ*.

Found on dead shells, in sandy mud, at a depth of six fathoms.— W. J. B.

CALYPTRÆA DILATATA, *Lam.*, varietas intùs nigro-castanea. *Cal. testâ sordidè albâ castaneo strigatâ; intùs nitidè nigro-castaneâ; laminâ albâ: diam.* 1½, *lat.* 1⅛, *alt.* ¼ *poll.*

Hab. ad Valparaiso.

This highly coloured variety was found on exposed rocks at low water. The pure white of the plate shows to great advantage, lying above the rich back ground of the interior of the shell. In some individuals this internal colour is all but black.—W. J. B.

CALYPTRÆA STRIGATA. *Cal. testâ subcorrugatâ, sordidè rubrâ albo variâ; intùs subrufâ interdum albâ vel albâ rubro-castaneo variâ: diam.* 1 *poll.*

Hab. ad Valparaiso.

This varies much both in colour and shape. Some of the specimens are quite flat, and the *lamina* almost convex. An obscure subarcuate longitudinal whitish broad streak may be traced on the backs of most of them. It is not impossible that it may be a variety of *Cal. dilatata.*

Found on *Mytili* at depths varying from three to six fathoms.—W. J. B.

CALYPTRÆA ECHINUS. *Cal. testâ albidâ violaceo maculatâ, interdum fuscâ, striis longitudinalibus creberrimis spinis fornicatis horridâ; intùs flavente vel albâ: diam.* 1$\frac{1}{4}$, *lat.* 1$\frac{1}{4}$, *alt.* $\frac{1}{4}$ *poll.*

Hab. ad Peruviam. (Lobos Island.)

In old specimens the spines are almost entirely worn down, and rough *striæ* only, for the most part, remain. In this state it bears a great resemblance to the figure given of *Crepidula fornicata* in Sowerby's Genera of Shells, No. 23, f. 1.

Found under stones at low water.—W. J. B.

CALYPTRÆA HYSTRIX. *Cal. sordidè albâ vel fuscâ, complanatâ, longitudinaliter striatâ, spinis magnis fornicatis apertis seriatim dispositis; intùs albidâ, interdum castaneo maculatâ: diam.* 1$\frac{1}{4}$, *lat.* $\frac{7}{8}$, *alt.* $\frac{1}{4}$ *poll.*

Hab. ad Peruviam. (Lobos Island.)

Approaching the last, but differing in being always more flattened, in the comparatively great size of the vaulted spines, and in the comparatively wide interval between them; still I would not be positive that they are not all varieties of *Crepidula aculeata,* Lam.—W. J. B.

CALYPTRÆA PALLIDA. *Cal. testâ sordidè albâ, ovatâ; apice prominente: diam.* $\frac{7}{8}$, *lat.* $\frac{5}{8}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Insulas Falkland dictas.

Found under stones.—W. J. B.

Subgenus CREPIDULA, *Less.*

Laminâ subrectâ, apice postico et submedio.

CREPIDULA UNGUIFORMIS, Lam., varietas complanato-recurva: *long.* 1$\frac{1}{8}$, *lat.* $\frac{5}{8}$ *poll.*

Hab. ad Insulam Chiloen et ad Panamam.

This variety affords a good example of the powers of adaptation of the animal. The shell is either flattened or concave on the back, and recurved in consequence of its adhesion to the inside of dead shells of *Ranellæ Vexillum, cælata,* &c.

It was dredged from sandy mud, at a depth ranging from four to ten fathoms.—W. J. B.

CALYPTRÆA LESSONII. *Cal. testâ complanatâ, subconcentricè foliaceâ, foliis tenuibus, albâ fusco longitudinaliter strigatâ; intùs albidâ; limbo interno interdum fusco ciliato-strigato: long.* 1$\frac{5}{10}$, *lat.* 1$\frac{1}{8}$, *alt.* $\frac{1}{4}$ *poll.*

Hab. in sinu Guayaquil. (Isle of Muerte.)

This beautiful species, which I have named in honour of M. Lesson, was found under stones at low water. It will remind the observer of the upper valves of some of the *Chamæ*.—W. J. B.

CALYPTRÆA INCURVA. *Cal. testâ fusco nigricante, tortuosâ, corrugatâ; intùs nigricante, septo albo; apice adunco: long.* $\frac{6}{8}$, *lat.* $\frac{4}{8}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Sanctam Elenam et ad Xipixapi.

Found on dead shells dredged from sandy mud, at a depth ranging from six to ten fathoms.—W. J. B.

CALYPTRÆA EXCAVATA. *Cal. testâ crassiusculâ, subtortuosâ, lævi, albidâ vel subflavâ fusco punctatâ et strigatâ; intùs albâ vel albâ fusco fucatâ, limbo interdum fusco ciliato-strigato: long.* $1\frac{4}{8}$, *lat.* $1\frac{1}{8}$, *alt.* $\frac{6}{8}$ *poll.*

Hab. ad Real Llejos.

This species is remarkable for the depth of the internal margin before it reaches the *septum*. In *Crepidula adunca*, Sow., this depth is even greater than it is in *Crep. excavata*. The *apex* is close to the margin, and obliquely turned towards the right side.—W. J. B.

CALYPTRÆA ARENATA. *Cal. testâ subovatâ, albidâ rubro-fusco creberrimè punctatâ; intùs subrubrâ vel albidâ subrubro maculatâ, septo albo: long.* $1\frac{1}{8}$, *lat.* $\frac{7}{8}$, *alt.* $\frac{5}{12}$ *poll.*

Hab. ad Sanctam Elenam.

This approaches *Crep. porcellana*. The *septum* is somewhat distant from the margin, and the *apex*, which is also somewhat distant from it, is obtuse and obliquely turned towards the right side.

From sandy mud, on shells, at a depth ranging from six to eight fathoms.—W. J. B.

CALYPTRÆA MARGINALIS. *Cal. testâ subovatâ, sublævi vel vix corrugatâ, subflavâ vel albidâ fusco strigatâ; intùs nigricante vel flavâ fusco strigatâ, septo albo: long.* $1\frac{1}{8}$, *lat.* $\frac{10}{12}$, *alt.* $\frac{5}{12}$ *poll.*

Hab. ad Panamam et ad Insulam Muerte.

This species was found on stones and shells, in sandy mud, at a depth ranging from six to ten fathoms. The white *septum* shows beautifully against the black-brown of the interior. The *apex* is almost lost in the margin, and is directed towards the right side.—W. J. B.

CALYPTRÆA SQUAMA. *Cal. testâ suborbiculari, complanatâ, sublævi, subtenui, pallidè flavâ vel albidâ fusco substrigatâ; intùs subflavâ vel subflavâ fusco strigatâ: long.* 1, *lat.* $1\frac{1}{8}$, *alt.* $\frac{2}{12}$ *poll.*

Hab. ad Panamam.

The *apex* of this very flat species is lost in the margin. Found under stones.—W. J. B.

May 27, 1834.

William Yarrell, Esq., in the Chair.

A Letter was read, addressed to the Secretary by Sir R. Ker Porter, Corr. Memb. Z. S., dated City of Caracas, April 7, 1834. It related chiefly to a *Monkey*, and to some *Tortoises*, recently presented to the Society by the writer.

The *Monkey* is described in detail. It is the *Pithecia sagulata*, the *jacketed Monkey* or *Simia sagulata* of Dr. Traill. Sir R. Ker Porter points out the several differences in colouring which exist between this individual and the published description by the Baron Humboldt of the *Pithecia Chiropotes*: these consist chiefly in the comparative paleness of its back, and the greater darkness of the remainder of its body and of its bushy beard. He adds that the animal drinks frequently, always bending down on its hands, and putting its mouth to the surface of the water, heedless apparently of wetting its beard, and indifferent to the observations of lookers-on: he never saw it take up water in the hollow of its hand, and carry it in this manner to its mouth in order to drink. Its favourite fruit is the apple; and it does not refuse the pinion of a roasted chicken. Its voice is a weak and chirping whistle, which becomes shrill and loud when the animal is angry. It was obtained from the vicinity of the Orinoco, not far distant from the Rio Negro, in the heart of Guiana. It is known as the *Moño Capuchino*.

The *Tortoises* are referable to the *Testudo carbonaria*, Spix.

The Secretary announced that there had recently been added to the Menagerie a *white-crested Cockatoo, Plyctolophus cristatus*, Vieill.; and a pair of the *blue Jay, Garrulus cristatus*, Cuv.

He also stated that there had been acquired for the Menagerie a *Rhinoceros* of the *one-horned* species of Continental India. It is said to be about four years old. Its height at the loins, the highest part of the back, is 4 feet 10_T inches; its length, from the root of the tail to the tip of the nose, measured in a straight line, is 10 feet 6 inches; its weight is about 26 cwt.

A specimen was exhibited of the young of the *Sandwich Island Goose, Bernicla Sandvicensis*, Vig., which was hatched at Knowsley. It was accompanied by the following note from the President, Lord Stanley.

"Through the kindness of John Reeves, Esq., I received at Knowsley a pair of these birds on the 15th of February, 1834.

They did not at first, when turned out on the pond among the other water-fowl, appear to take much notice of each other; but some workmen being at the time employed about the pond, one of the birds (I think, from recollection, it was the male,) seemed to have formed some sort of attachment to one of the men working. Whenever he was present the goose was always near to him, and whenever absent at his dinner, or when otherwise employed, the bird appeared restless, and gave vent to its solicitude by frequent cries, which as well as the anxiety, always ceased with the reappearance of the workman.

"The man having frequently occasion to pass through a door, which was obliged to be kept open, it was feared that the attachment of the animal might lead to its following its friend, and that on its exit, it might fall in with and be worried or stolen by vermin, and in consequence the pair of geese were confined in one of the divisions adjacent to, but divided from, the pond, on February 26.

"Within this small inclosure, in the sheltered half of it, in one corner, stood a small hutch, in which the female on the 5th of March laid her first egg. Till within a few days of that period no alteration took place in their manners, but it then became obvious that the male was jealous of intruders, and would run at and seize them by the trowsers, giving pretty sharp blows with his wings; but this always ceased if he observed that the female was at some distance, when he would instantly rejoin her: his return to the female was always accompanied by great hurry and clamour, and much gesticulation up and down of his head, but not of the wings. Three other eggs followed on the 7th, 9th, and 11th of March. The eggs were white, and very large in proportion to the size of the bird, being, I should imagine, (for, having no proper scales at hand, I did not weigh or subtract any of them, hoping that more might be laid,) fully equal to those of the *Swan Goose* or *Anas cygnoides*. The goose also surprised us by the rapidity of her operations, for we were hardly aware of the fourth egg having been laid that morning, when it was evident that she had begun to sit. During the whole period of incubation there could not be a more attentive nurse, and indeed she could not well help it, for the male, if she seemed inclined to stay out longer than he thought right, appeared, by his motions, to be bent on driving her back, nor was he satisfied till he had accomplished his object, when he again resumed his usual position, with his body half in half out of the hutch and his head towards the female; but if any person crossed the yard of the division, he would immediately hurry after the intruder, though, if he found there was no intention of molesting the nursery, he seemed generally satisfied, and did not like to quit the sheltered part of the division. At night he constantly made room for himself by the female, the result of which was unfortunate towards the progeny.

"On the 12th of April the eggs began to chip, and on the 13th two goslings were excluded; but it was found that the mother had pushed from under her the other two eggs, which were consequently taken away and put under a hen, though, as one was very nearly

cold, little hopes of any success with that were entertained, and it was in fact never hatched, but probably died in consequence of the removal by the goose at an important moment. On the morning of the 14th it was ascertained that she or the male, who always now sat close beside her in the box, had killed one of the two she had at first hatched, for it was found dead and perfectly flat. The fourth egg, which was put under the hen, was assisted out of the shell, and appeared weakly from the first, and as its mother had lost one, we put it to her, in hopes it would do better than with its nurse. She took to it at first very well; but subsequently, both the parents beating it, it was returned to, and well cared for, apparently, by its nurse, but died on the 20th, having received some injury in one eye, either from the old ones, or perhaps from the hen scratching, and thereby hitting it. The remaining gosling is doing very well, and appears strong and lively, and the parents are extremely attentive to it; and I have little doubt but these birds may easily be established, (with a little care and attention,) and form an interesting addition to the stock of British domesticated fowls.

"In its general appearance, and its Quaker-like simplicity of plumage, it seems to approximate most to the family of the *Bernacles*; but it appears to have almost as little (if as much) partiality for the water as the *Cereopsis*."

The bird in question was named by Mr. Vigors at the Meeting of the Society on June 11, 1833. It may be characterized as follows:

Bernicla Sandvicensis. *Bern. brunneo-nigrescens, subtùs marginibusque plumarum pallidioribus; collo albescenti; guld, facie, capite supernè, lineâque longitudinali nuchali nigris; crisso albo.*

Long. tot. 24 unc.; *rostri*, rictus, 1¼; *alæ*, 13¼; *caudæ*, 5; *tarsi*, 2¼.

Hab. in insulis Sandvicensibus, et in Owhyhee.

Mr. Owen read a Paper "On the young of the *Ornithorhynchus paradoxus*, Blum." It was illustrated by drawings of the young animal and of various details of its structure, both external and internal, derived chiefly from the examination of the individual recently presented to the Society by Dr. Weatherhead: this individual was exhibited, as was also a smaller specimen, forming part of Dr. Weatherhead's collection.

The circumstances which first attract attention in these singular objects are the total absence of hair; the soft and flexible condition of the mandibles; and the shortness of these parts in proportion to their breadth as compared with the adult. The tongue, which in the adult is lodged far back in the mouth, advances in the young animal close to the end of the lower mandible, and its breadth is only one line less in an individual four inches in length than it is in fully grown animals; a disproportionate development which is plainly indicative of the importance of the organ to the young *Ornithorhynchus* both in receiving and swallowing its food.

On the middle line of the upper mandible, and a little anterior to the nostrils, there is a minute fleshy eminence lodged in a slight de-

pression. In the smaller specimen this is surrounded by a discontinuous margin of the *epidermis*, with which substance, therefore,—and, probably, from its having been shed, of a thickened or horny consistence,—the caruncle had been covered. It is a structure of which the upper mandible of the adult presents no trace, and Mr. Owen regards it as analogous to the fœtal peculiarity of the horny knob on the upper mandible of the *Bird*. He does not, however, conceive that this remarkable example of the affinity of *Ornithorhynchus* to the feathered class is necessarily indicative of its having been applied, under the same circumstances, to overcome a resistance of precisely the same character as that for which it is designed in the young bird, since all the known history of the *ovum* of *Ornithorhynchus* points strongly to its ovoviviparous development.

The situation of the eyes is indicated by the convergence of a few wrinkles to one point; but the integument is continuous, and completely shrouds the eyeball. In the absence of vision in the young animal, strong evidence is afforded of its being confined to the nest, there to receive its nourishment from its dam; and this deduction is corroborated by the cartilaginous condition of the bones of the extremities, and by the general form of the body: the head and tail are closely approximated on the ventral aspect, requiring force to pull the body into a straight line; and the relative quantity of integument on the back and belly shows that the position necessary for progressive motion is unnatural at this stage of growth.

Mr. Owen describes other external appearances of the young *Ornithorhynchus*, and then enters at considerable length into its anatomy. The stomach is nearly as large in an individual four inches in length as in the adult animal. In this specimen it was found filled with coagulated milk, and no trace was visible, on the most careful examination, of worms or bread, on which, up to the time of his discovery of the mammary secretion, Lieut. the Hon. Lauderdale Maule had believed that this individual had been sustained. A portion of this coagulated substance was diluted with water, and examined under a high magnifying power in comparison with a portion of cow's milk coagulated by spirit, and similarly diluted. The ultimate globules of the *Ornithorhynchus's* milk were most distinctly perceptible, detaching themselves from the small coherent masses to form new groups: the corresponding globules of the cow's milk were of larger size. Minute transparent globules of oil were intermixed with the milk globules of the *Ornithorhynchus*. A drop of water being added to a little mucus, it instantly became opake; and its minutest divisions, under the microscope, were into transparent angular flakes, entirely different from the regularly formed granules of the milk of the *Ornithorhynchus*.

In passing in review the several *viscera* of the young *Ornithorhynchus*, Mr. Owen observed on various physiological deductions which might be drawn from them, and on the differences and resemblances borne by them to the same organs in the ordinary viviparous *Mammalia* and in the *Marsupiata*.

June 10, 1834.

Richard Owen, Esq., in the Chair.

A collection of objects of Zoology, made by Lieut. Allen, R.N., Corr. Memb. Z. S., during his late expedition up the Quorra into the interior of Africa, and presented by him to the Society, was exhibited. It was accompanied by another collection formed by the same gentleman at Fernando Po. They comprehended a previously undescribed species of *Plover*; an undescribed *Tetrodon* and a *Myletes*; specimens of *Polypterus Senegalus*, Cuv., and of a *Gymnarchus*, Ej.; and specimens of the *three-horned Chamæleon, Chamæleo Oweni*, Gray, and of a *Galago, Galago Senegalensis*, Geoff.; the two latter being from Fernando Po. They also included numerous *Insects* and *Arachnida*, both from the interior and from the island.

The bird was characterized by Mr. Gould:

VANELLUS ALBICEPS. *Van. capite, gulâ, alis in medio, uropygio, ventre, crissoque albis; faciei lateribus colloque purpurascenti-cinereis; scapularibus, remigibus prioribus tribus, caudæque dimidio apicali nigris.*

Long. tot. a rostri ad caudæ apicem, 13 unc., a rostri ad digitorum apicem, 15 unc.; *alæ*, 8; *caudæ*, 4; *tarsi*, 3; *femoris*, 3; *rostri*, a rictu ad apicem, 1½.

Rostrum viridi-aurantiacum, ad apicem nigrum.

Between the eye and the upper mandible is situated a fleshy substance (resembling that of the *common Cock*) which hangs down at right angles with the beak; it is of an orange colour, and is narrow in form, being one inch and a half long and half an inch wide at the base, whence it gradually tapers throughout its whole length to the tip. The spur on the shoulders is strong and sharp, and is nearly an inch in length.

The *Fishes* were characterized by Mr. Bennett, who remarked on the complete analogy borne by these species of the rivers of Western Africa to some of those of the Nile. The form of *Myletes*, Cuv., to which Lieut. Allen's fish belongs, has hitherto been obtained only in Egypt; the genus *Polypterus*, Geoff., originally observed in the Nile, seems to be limited to that river and to Senegal; the genus *Gymnarchus*, Cuv., has previously been noticed only in the Nile; and the *Tetrodon* of this collection resembles in its markings that of Egypt. The new species may be thus characterized:

MYLETES ALLENII. *Myl. oblongus; pinnâ dorsali primâ supra ventrales positâ.*

D. 10, 0. A. 14. C. 19. P. 15. V. 9.

Specimen minimum, biunciale, a *Myl. Hasselquistii*, Cuv., (*Salmo Dentex*, Hass.,) differre videtur situ pinnæ dorsalis primæ.

TETRODON STRIGOSUS. *Tetr. dorso hispido, nigrescente; ventre lateribusque lævibus, his albo nigroque longitudinaliter lineatis, illo albo: pinnâ caudali quadratâ; pectoralibus latè rotundatis.* D. 12. A. 9. P. 19. C. 8.

Tetr. lineato, Linn., (*Tetr. Physa,* Geoff.,) analogus videtur. Differt maximè ventre lateribusque haud armatis.

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and among the islands of the South Pacific Ocean. Those brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby. They belonged to the

Genus PETRICOLA.

PETRICOLA ELLIPTICA. *Pet. testâ ovato-ellipticâ, rufescenti-albidâ, radiatim costatâ, posticè lævi; lamellis concentricis sparsis; lunulâ anticâ distinctâ: long.* 1·2, *lat.* 0·7, *alt.* 0·9 *poll.*

Hab. ad Paytam.

Found in hard mud at low water.—G. B. S.

PETRICOLA OBLONGA. *Pet. testâ oblongo-ellipticâ, pallescente; radiatim costellatâ; lineâ dorsali posticâ rectiusculâ; lamellis concentricis pluribus, posticè lævigatis: long.* 0·9, *lat.* 0·5, *alt.* 0·7 *poll.*

Hab. ad oras Peruviæ. (Pacosmayo.)

Found in hard mud at low water.—G. B. S.

PETRICOLA SOLIDA. *Pet. testâ subgloboso-ellipticâ, pallescente, umbonibus extremitatibusque ambabus fusco-violaceis; radiatim costatâ, posticè lævigatâ; lineis incrementi nonnunquam sublamellosis, posticè magis eminentibus: long.* 1·3, *lat.* 0·8, *alt.* 1·0 *poll.*

Hab. ad oras Peruviæ. (Lambeyeque.)

Found in hard clay and stones at low water.—G. B. S.

PETRICOLA DISCORS. *Pet. testâ oblongo-ellipticâ, brunnescente; radiatim costellatâ, costellis acutis, posticè lævi; lineâ dorsali rectâ: long.* 0·8, *lat.* 0·3, *alt.* 0·55 *poll.*

Hab. ad littora Peruviæ. (Lambeyeque.)

Found in hard clay.—G. B. S.

PETRICOLA CONCINNA. *Pet. testâ oblongâ, pholadiformi, albicante; concentricè costellatâ; anticè rotundatâ, radiatim sulcatâ; dorso declivi, alterius valvæ lamellâ lævigatâ; posticè acuminatiusculâ, costellis concentricis lamellosis, confertis: long.* 0·8, *lat.* 0·35, *alt.* 0·35 *poll.*

Hab. ad Montem Christi.

Only one perfect pair and a single valve could be preserved.

Found in hard clay at low water.—G. B. S.

PETRICOLA DENTICULATA. *Pet. testâ oblongâ, pholadiformi, extùs pallescente, intùs ad extremitates fusco-nigricante tinctâ; anticè subrostratâ, posticè rotundatâ; lineâ dorsali rectiusculâ,*

centrali subprominulâ; omninò radiatim sulcatâ et concentricè striatâ, striis anticè sublamellosis denticulatis: long. 1·3, *lat.* 0·6, *alt.* 0·6 *poll.*

Hab. ad Paytam Peruviæ.

Found in hard clay and stones at low water.—G. B. S.

Var. *abbreviata. Testâ breviore, striis sublamellosis denticulatis nullis: long.* 1·1, *lat.* 0·6, *alt.* 0·6 *poll.*

Hab. ad Insulam Platæ.

Found in stones at low water.—G. B. S.

PETRICOLA RUGOSA. *Pet. testâ oblongâ, pholadiformi, albicante; radiatim costellatâ, tenuissimè concentricè striatâ; marginibus plerumque deformibus: long.* 1·4, *lat.* 0·55, *alt.* 0·7 *poll.*

Hab. ad oras Chilenses. (Conception.)

Found in *Balani* at from three to seven fathoms depth.—G. B. S.

PETRICOLA TENUIS. *Pet. testâ oblongâ, pholadiformi, tenui, albicante; radiatim costellatâ, costellis anticis posticisque fortioribus, omnibus striis exilissimis rugulosis decussatis; latere antico brevissimo: long.* 1·, *lat.* 0·5, *alt.* 0·55 *poll.*

Hab. ad littora Peruviæ. (Lambeyeque & Pacosmayo.)

Found in hard clay at low water.—G. B. S.

PETRICOLA ROBUSTA. *Pet. testâ rotundato-subtrigonâ, subgibbosâ, solidiusculâ, extùs rufescente-fuscâ, intùs nigricante; radiatim costatâ, costis anticis tenuioribus confertioribus, posticis altioribus; interstitiis omnibus exilissimè decussatim striatis; latere antico rotundato, postico subacuminato; margine dorsali declivi: long.* 1·2, *lat.* 0·8, *alt.* 0·9 *poll.*

Hab. ad Panamam et ad Insulam Muerte dictam.

Found in rocks at the depth of from six to eleven fathoms.—G. B. S.

PETRICOLA AMYGDALINA. *Pet. testâ tenui, subhyalinâ, flavescente, obovatâ, lævi; latere antico brevissimo, angustiore; postico longiore, altiore, lamellis nonnullis elevatis distantibus ornato: long.* 1·3, *lat.* 0·5, *alt.* 0·8 *poll.*

Hab. ad Insulas Gallapagos.

Found in *Mother-of-Pearl Shells* in from three to six fathoms at Lord Hood's Island.—G. B. S.

The following "Description of a new Genus of *Gasteropoda*, by W. J. Broderip, Esq., Vice President of the Geological and Zoological Societies, F.R.S., &c." was read.

SCUTELLA.

Testa Ancyliformis, intùs nitens. Apex posticus, medius, involutus. Impressiones musculares duæ, oblongo-ovatæ, laterales. Apertura magna, ovata.

Animal marinum.

This genus appears to be intermediate between *Ancylus* and *Patella*, while the aspect of the back sometimes reminds the observer of *Navicella* or *Crepidula*, Lam. Its place will most probably be among the *Cyclobranches* of Cuvier.

The two muscular impressions are situated on each side of the interior a little below the summit; while, in *Patella*, they nearly surround the internal circumference of the same part of the shell. The aperture is generally surrounded by a margin, and the *apex*, which in *Ancylus* is oblique, is central though posterior.

Mr. Cuming brought home the following species which I now proceed to describe.

SCUTELLA CRENULATA. *Scut. testâ subconicâ, cancellatâ, striis ab apice radiantibus exasperatis, albâ; intùs nitente; annulo marginali et margine crenulatis: long.* $\frac{5}{8}$, *lat.* $\frac{1}{2}$, *alt.* $\frac{1}{12}$ *poll.*

Hab. ad insulam Anäan (Chain Island).

This shell was found dead on coral sand on the beach of the island at a distance from any fresh water.

The marginal ring is very strongly developed, and the margin itself is not even; for when the shell is placed with the aperture downwards on a flat surface, it rests on the two ends, the sides of the margin forming each a low arch.

SCUTELLA IRIDESCENS. *Scut. testâ oblongo-ovatâ, complanatâ, minutissimè substriatâ, albo et roseo guttatim tessellatâ; intùs iridescente, margine interno albo, roseo maculato: long.* $\frac{3}{10}$, *lat.* $\frac{2}{10}$, *alt.* $\frac{1}{10}$ *poll.*

Hab. in Oceano Pacifico. (Grimwood's Island.)

This species was gathered by Mr. Cuming on the sands when the tide was out. There was no fresh water near, and though he obtained several individuals in the finest condition, the soft parts were gone, having evidently but lately fallen a prey to some carnivorous creature.

The shape of *Scut. iridescens* is very elegant, and the silvery iridescent nacre which lines the inside of the shell, contrasted as it is with the less brilliant but lively coloured margin, is almost dazzling. The back of the shell, which is very brittle, is mottled with white and rose colour. This disposition of its markings almost conveys the impression that the surface of the back is uneven; but with the exception of the very minute *striæ*, which are almost imperceptible, it is smooth.

SCUTELLA ROSEA. *Scut. testâ subconicâ, striatâ, albâ, lineis flammulisque roseis ornatâ; intùs nitente, interdum subiridescente: long.* $\frac{1}{2}$, *lat.* $\frac{1}{12}$, *alt.* $\frac{1}{12}$ *poll.*

OBS. Varietas forsan præcedentis.

Hab. cum præcedente.

The shape and many other points in this shell differ from those of *Scut. iridescens*. Externally it is much more conical and the *striæ* which run from the *apex* to the interior margin are direct and minute, while those which are lateral are much coarser and cross the somewhat elevated white parts obliquely: in *Scut. iridescens*, the exceedingly minute *striæ* radiate evenly from the *apex*. In *Scut. rosea* we lose the brilliancy of the internal nacre which distinguishes *Scut. iridescens*, and, in some individuals, it is entirely absent. Still the

former may only be a variety of the latter: both were found together.—W. J. B.

The *Shells* described in this communication were exhibited.

A note by Mr. G. Bennett, Corr. Memb. Z.S., was read. It gave an account of a *Pelican* now living in the grounds of Mr. Rawson at Dulwich, which wounded itself just above the breast to such an extent as to expose a spacious cavity. The bandages applied to the part were repeatedly torn off by the bird for the space of ten days, at the expiration of which the wound was healed. During the whole of the time the bird was in perfect health; eating fish and drinking as usual. The scar of the wound is still readily observable.

June 24, 1834.

Joseph Sabine, Esq., Vice President, in the Chair.

A letter was read, addressed to the Secretary by Keith E. Abbott, Esq., and dated Trebizond, Dec. 10, 1833. It referred principally to a collection of objects of Zoology formed by the writer in his neighbourhood and presented by him to the Society; and contained notices of other objects which he expects to be able to procure and transmit.

It also gave some account of "the famous honey of Trebizond, which is spoken of by Xenophon in his history of the retreat of the ten thousand Greeks, as having produced the effect of temporary madness or rather drunkenness on the whole of the army who ate of it, without, however, causing any serious consequences. It is supposed to be from the flowers of the *Azalea Pontica* that the *Bees* extract this honey, that plant growing in abundance in this part of the country, and its blossom emitting the most exquisite odour. The effect which it has on those who eat it is, as I have myself witnessed, precisely that which Xenophon describes: when taken in a small quantity it causes violent head-ache and vomiting, and the unhappy individual who has swallowed it resembles as much as possible a tipsy man; a larger dose will completely deprive him of all sense and power of moving for some hours afterwards." A portion of the honey accompanied the letter, and was exhibited.

The other objects presented by Mr. Keith Abbott were also exhibited.

At the request of the Chairman, Mr. Gould brought the *Birds* severally under the notice of the Meeting. Their principal interest rested on the assistance afforded by a collection formed in such a locality towards the determination of the geographical limits of certain species. Those among the *Birds* of Europe which are found in India also would, it is reasonable to anticipate, occur in the intermediate locality of Trebizond; but there are, among the Trebizond *Birds*, various European species which do not, as far as is yet known, occur in India, and the existence of which in so eastern a range is consequently interesting.

The following species are contained in the Trebizond collection presented to the Society by Mr. Keith Abbott. The remarks as to the localities inhabited by them respectively are by Mr. Gould.

1. *Aquila pennata.* Inhabiting eastern Europe and the adjacent parts of Asia and Africa.

2. *Buteo vulgaris,* Bechst. European; but not previously observed in Asia, although there is a nearly allied species in the Himalayan mountains. It has not yet been noticed in Africa.

3. *Circus æruginosus.* European, Indian, and African.

4. *Circus cyaneus.* European, African, Indian, Chinese, and North American specimens present no apparent specific differences.

5. *Circus cineraceus.* European, Indian, and African.

6. *Coracias garrula,* Linn. Inhabiting Europe, and abundantly Northern Africa; but hitherto not observed in India.

7. *Lanius Collurio,* Linn. Hitherto not obtained from India.

8. *Cinclus aquaticus,* Bechst. Hitherto not obtained from any locality so far to the east as Trebizond.

9. *Saxicola Œnanthe,* Bechst. Similarly circumstanced with the last.

10. *Parus major,* Linn. Also similarly circumstanced.

11. *Parus biarmicus,* Linn. European, and of Eastern Asia; but hitherto not observed in India.

12. *Pyrgita domestica,* Cuv. European, and obtained also from the Nubian mountains, as well as from the Himalayan and from other parts of India.

13. *Carduelis communis,* Cuv. Not hitherto observed in India.

14. *Emberiza miliaria,* Linn. Previously not obtained from any locality so far to the east as Trebizond.

15. *Sturnus vulgaris,* Linn. Common to the three continents of the old world.

16. *Troglodytes communis,* Cuv. Not hitherto observed in India.

17. *Tichodroma muraria,* Ill. Inhabiting the South of Europe, and found also in the Himalayan mountains, but not in the low lands of India.

18. *Otis Tetrax,* Linn. Inhabiting Europe and Africa, but not India.

19. *Œdicnemus crepitans,* Cuv. Similarly circumstanced with the last.

20. *Vanellus* ——— ? A young bird of a species apparently undescribed.

21. *Tringa variabilis,* Meyer. European and American; but hitherto not observed in India or Africa.

22. *Tringa pugnax,* Linn. European and Chinese.

23. *Totanus Glottis,* Bechst. Not hitherto observed in India or Africa.

24. *Botaurus stellaris.* Inhabiting the three continents of the old world.

25. *Sterna Hirundo,* Linn. Inhabiting Europe and America, but not observed in India.

26. *Sterna leucoptera,* Temm. Hitherto not observed out of Europe.

27. *Tadorna Vulpanser.* Similarly circumstanced with the preceding.

28. *Anas Boschas,* Linn. Almost universal.

Mr. Keith Abbott states that in addition to the above-named birds he has shot at Trebizond the following:

Falco rufipes, Bechst.
Oriolus Galbula, Linn.
Pastor roseus, Temm.
Pterocles arenarius, Temm.
Totanus Calidris, Bechst.

Totanus ochropus, Temm.
Anas rutila, Pall.

At the request of the Chairman Capt. Stoddart exhibited, with the permission of the Committee of the Naval and Military Museum, three *Birds* forming part of that collection. These were the *Columba spiloptera*, Vig.; the *Tetraogallus Nigellii*, Gray; and a new species of *Numida*, Linn., remarkable for the nakedness of the head and of the greater part of the neck; for the possession of long hackled feathers round the base of the neck and on the breast; and for the absence of caruncle on the head. The latter bird was accompanied by a detailed description by Major-General Hardwicke, which was read. In it the author pointed out the distinctive characters between this new species and the several previously described birds of the genus *Numida*. It may be characterized as follows:

NUMIDA VULTURINA. *Num. capite haud cristato collique parte anteriore nudis, occipite tantùm brunneo-plumoso; colli inferioris pectorisque plumis elongatis, lanceolatis, cæruleo nigroque variis, vittâ albâ mediâ notatis; brunneo-nigra, albo guttata, fasciata, et lineata.*

Long. a rostri ad caudæ apicem, 18 unc.; ad digiti medii apicem, 24; *rostri*, 2 unc.

Rostrum brunneo-rubrum.

The specimen was brought by Capt. Probyn from the Western Coast of Africa. From the injured condition of the tail- and wing-feathers it is evident that it had been kept in confinement, and it has the appearance of having been under the influence of moulting when it died.

Mr. Sabine called the attention of the Meeting to a specimen of a hybrid *Bird* between the *common Pheasant, Phasianus Colchicus*, Linn., and the *grey hen, Tetrao Tetrix*, Linn., which was exhibited. Its legs were partially feathered; it bore, on the shoulder, a white spot; and its middle tail-feathers were lengthened. Mr. Sabine stated his intention of entering at some length into the history of hybrid and cross animals in connexion with his description of this bird. It was bred in Cornwall.

A specimen was exhibited of a *Bat* captured in New Holland by George Bennett, Esq., Corr. Memb. Z. S. It was brought under the notice of the Meeting by Mr. Gray, who regarded it as previously undescribed. He characterized it as

RHINOLOPHUS MEGAPHYLLUS. *Rhin. prosthemate posteriore ovato-lanceolato, faciem latitudine subæquante; pallidè murinus; patagiis subnudis pilis parcis albis subtùs prope corpus instructis.*

Long. *humeri*, 12½ lin.; *ulnæ*, 22½; *pollicis* cum ungue, 4; *tibiæ*, 9; *pedis*, 5; *calcaris*, 5; *caudæ*, 12.

Hab. in Novâ Hollandiâ, in cavernis prope fluvium Moorumbidjee dictum.

"The hinder nose-leaf is bristly, ovate-lanceolate, nearly as broad at the base as the face, with a rather produced tip; the *septum* of the nose is grooved; and the front leaf expanded with a quite free membranaceous edge. The head is elongated; the face depressed; the muzzle rounded; the ears are large, reaching when bent down rather beyond the tip of the nose. The fur is soft and of a pale mouse colour. The membranes are dark and naked, with rather distant whitish hair on the under side near the sides of the body.

"This *Bat* is very nearly allied to the true European *Rhinolophi*, and agrees with them in having four cells at the base of the hinder nose-leaf, and distant pectoral teats. It differs from them in having a much broader nose-leaf. The pits on the nose and the distant teats are not found in the other *Rhinolophi*, which have no hinder nose-leaf. These I propose to separate from the others under the name of *Hipposiderus*."

Mr. Gray also exhibited specimens of several *fresh-water Tortoises*. Of these he had recently received three from John Russel Reeves, Esq., of Canton, two of which he regarded as being previously undescribed. These he now characterized as follows:

EMYS NIGRICANS. *Em. testâ obovato-oblongâ, convexâ, nigro-fuscâ; subtricarinatâ, carinâ mediânâ obtusâ posticè continuâ, lateralibus indistinctis distantibus; scutellis obscurè radiatis, vertebralibus latis, anterioribus pentagonis; marginibus revolutis, posticâ subserratâ; infrà ad latera luteo maculatâ; sternum subconvexum, luteum, nigro variegatum.*

Long. *testæ*, 3 poll.

Hab. in Chinâ prope Canton.

This species is nearly allied in shape and colour to *Em. crassicollis*, Bell, but differs by the distance and indistinctness of its lateral keels, the convexity of its *sternum*, and the shape of its anterior vertebral plates. From *Em. Thurjii*, Gray, it is distinguished by its smaller size, the darkness of its colour, and the yellow spotting on the under side towards the edge of the shell.

The character is taken from a half-grown shell, from which the animal had been removed.

EMYS SINENSIS. *Em. testâ ovatâ, convexâ, subcarinatâ, olivaceâ nigro punctatâ; scutellis lævibus, luteo strigatis, vertebralibus latis hexagonis; marginibus integris, lateralibus subrevolutis; subtùs lutea, maculis oblongis olivaceis nigro marginatis ornatâ; sterni lateribus subcarinatis: collo lineis tenuissimis flavis notato.*

Long. *testæ*, 5 poll.

Hab. in Chinâ.

Allied to *Em. vulgaris*, Gray, but easily distinguished by the orange streaks in the centre of each discal shield. The under side of each of the marginal plates is marked near its hinder edge by a large oblong subquadrate olive spot, which is dotted and margined with black; the axillary and inguinal plates are marked with a black ring. The sternal plates are varied with brown.

A third undescribed species of *Emys*, of which a specimen was ex-

hibited by Mr. Gray, was brought from Dukhun by Lieut. Col. Sykes. It was characterized as the

Emys tentoria. *Em. testâ ovato-oblongâ, olivaceâ; dorso subangulariter compresso; scutellis subrugosis, vertebralium primo quadrato, reliquis elongato-hexagonis carinatis posticè productis (tertio præcipue) tuberculatis, marginalibus sternalibusque flavo carinatis; sterno subplano parum elevato.*

Hab. in Indiæ Orientalis regione Dukhun dictâ.

A fourth new species characterized by Mr. Gray was the

Emys platynota. *Em. testâ ovatâ, convexâ, fuscâ; dorso complanato; scutellorum vertebralium primo lato hexagono; margine subintegro; sterno plano; capite luteo variegato.*

Hab. in Indiâ Orientali.

Long. *testæ*, 9 poll.

The shell differs at first sight from all the other species of the genus by the flatness of the middle of the back, agreeing in that character with *Hydraspis planiceps*, Bell.

Mr. Gray also exhibited a specimen of the *fresh-water Tortoise* which he had described in his 'Synopsis Reptilium,' under the name of *Cistuda Bealii*, from a drawing communicated to him by Mr. Reeves. The examination of the specimen subsequently received from Mr. Reeves has enabled him to ascertain that it is really an *Emys*, which is easily distinguishable from all the other known species of that genus by the possession of two eye-like spots on each side of the nape: the shell is in form like that of *Em. vulgaris*, Gray; its colour is dull olive, speckled with black as in *Cistuda Europæa*, Gray. The name of the species will now necessarily be changed to *Emys Bealii*.

With these *Terrapins* Mr. Reeves had also transmitted to Mr. Gray three specimens of *Cistuda Amboinensis*, Gray, two of which, differing very much from each other and from the typical species in external form, were exhibited.

The first is extremely heavy and solid, with a very high back. It appears to have belonged to an old animal, as the plates are worn nearly smooth; its *sternum* is solid, flat, rounded before and behind, and the gular and anal pairs of plates are each united into one, leaving only a slight groove between the gular pair, showing where the division is generally placed.

The second is very much depressed, expanded on the sides, so as to be nearly orbicular, and is as wide as it is long. This extension is chiefly produced by the length of the costal plates, for the vertebral ones are very narrow, the front one being rather longer than broad, and much narrower behind. The *sternum* is very broad, flat, rounded before, and slightly keeled behind. All the plates are separate.

Colonel Sykes exhibited several pieces of the leaden pipes used for the supply of water to his house, which were perforated by having been gnawed by *Rats*.

The following notes, by Mr. Rymer Jones, of the dissection of a

Tiger, Felis Tigris, Linn., which recently died at the Society's Gardens, were read.

The stomach was simple, 18 inches in length, and 13 in its greatest circumference. It was seated in the left hypochondriac and in the umbilical regions. The *œsophagus* entered it at 3 inches from its cardiac end. Its mucous coat exhibited beautifully minute convoluted *plicæ*, perhaps from the arrangement of the gastric glands. The pyloric valve was little distinct.

The *omentum* was loaded with fat, and extended about two thirds of the distance to the *pubes*.

The *duodenum* was loosely attached by a broad mesentery, and measured in length about 12 inches: the length of the small intestines was 18 feet; their circumference was uniform throughout, 2¼ inches. The *cæcum* was 2 inches long, and the same in circumference; its form being that which is met with in the *domestic Cat*. The length of the large intestines was 2 feet 10 inches; their circumference 4 inches. The muscular coat of the intestines was thick throughout their whole extent.

The liver, when spread out, resembled in form a vine-leaf, being divided by deep fissures reaching nearly to the hepatic vessels. It consisted of five lobes, the middle one of which was the largest; this presented below a deep fissure lodging the gall-bladder, which seemed to perforate the substance of the *viscus*, its *fundus* appearing in a hole on the convex surface. The length of the gall-bladder was 3 inches; its circumference 3¼; its shape pyriform; and its neck convoluted as in the *domestic Cat*: the length of the neck, when unravelled, was 2¼ inches. The bile entered the intestine at 4 inches from the *pylorus*, in common with the pancreatic secretion.

The *pancreas* was placed between the layers of *peritoneum* which formed the mesentery of the *duodenum*. It was of a long ribband-like form; 22 inches in length; 1 inch in its greatest and ¼ths in its least breadth.

The spleen was loosely attached to the cardiac extremity of the stomach; of a flat, club-shaped form; and measured at its broadest part 3 inches in width, at its narrowest, 1 inch: its greatest thickness was ¼ inch.

The lungs consisted of four lobes on the right and three on the left side.

The heart, of a pyramidal shape, and measuring 5 inches in length and 4 in breadth, was seated in the middle of the chest upon the *sternum*. The medium thickness of the muscular *parietes* of the right ventricle was ¼ inch, of the left ventricle, ¼ths. There were no traces of Eustachian valve, or of valve to the coronary vein. The *venæ cavæ* were two, one superior and one inferior. The primary branches of the *aorta* were also two.

The *trachea* consisted of forty-five rings, each forming rather more than a semicircle and being completed behind by a membrane which had the appearance of being muscular. It divided inferiorly into three branches, two of which passed to the right, and one to the left lung. The vocal ligaments were little prominent, and the *sacculus laryngis* was scarcely perceptible.

The *pharynx* was very muscular. The lining membrane of the *œsophagus* was disposed, in its upper third, in longitudinal *plicæ*, and throughout the rest of its extent in transverse folds resembling thickly placed *valvulæ conniventes*, becoming more numerous and smaller towards the stomach. The tonsils were exceedingly small, consisting of three or four little glandular patches under the mucous membrane. The *apex* of the *epiglottis* was obtusely pointed, and much curled towards the tongue: the *frænum epiglottidis* contained a powerful muscle serving to raise the *epiglottis:* the aryteno-epiglottidean ligament was so studded with mucous follicles as to represent glandular masses. The *dorsum* of the tongue, 10 inches in length, was thickly studded with retroverted spines, which towards the posterior part became converted into loose, triangular, fleshy appendages attached here and there to the surface.

The supra-renal glands were imbedded in fat and situated about 1 inch internal to the anterior extremity of the kidneys; their length was 2¼ inches, their breadth 1 inch. The kidneys were 4 inches in length, 2¼ in breadth, and 2¼ in thickness. They had the ordinary position and form, and exhibited on their surface the arborescent vessels observable in the *Felidæ* and *Viverridæ* generally. Their cortical and tubular portions were beautifully distinct; the medium thickness of the former being 3 lines. One *papilla* received the *tubuli uriniferi* of the whole kidney. The ureters terminated about 1 inch from the neck of the bladder. The urinary bladder, of an oval shape and 6 inches in length, was so small that without distension it would not have contained more than three or four ounces of fluid.

The prostate gland was ¼ of an inch in diameter and ⅛ths in thickness; its form was circular, flattened from before backwards; it was placed behind the neck of the bladder, which it did not embrace. When cut into, its substance exhibited a rosy white colour. Its secretion resembled whey, and was poured into the *urethra* through several little orifices on each side of the *verumontanum*, which was a little eminence half an inch in length. The *vasa deferentia* terminated with the ducts of the prostate. Nothing analogous to *vesiculæ seminales* was observed. Cowper's glands were of the size of moderately large hazel-nuts, surrounded by a strong muscular envelope; on cutting through this case the glandular masses were found to be of the size of large peas, the remainder of the bulk being made up by the thickness of the muscular covering; their secretion was poured out by two ducts into the bulbous portion of the *urethra*. The *urethra* was 9¼ inches in length; its mucous lining presented no *lacunæ*, and was, when slit open, ⅛ths of an inch broad at the *verumontanum*, ¼ at the membranous portion, ⅛ at the bulb, and about ⅛ths throughout the rest of its extent. The *penis* was 5¼ inches in length; the *glans* measuring ⅞ths of an inch and being of a conical form ending in a sharp point; its surface was studded with minute *papillæ*, but was quite smooth; it inclosed an *ossiculum* ⅛ of an inch in length.

The morbid appearances observed consisted of tubercular disease of the lungs, with rupture of the air cells in several places.

July 8, 1834.

William Yarrell, Esq., in the Chair.

A Letter was read addressed to the Secretary by M. Julien Desjardins, Corr. Memb. Z.S., dated Mauritius, January 10, 1834. It accompanied a collection of objects of Zoology, consisting chiefly of *Mammalia* and *Birds*, which were exhibited to the Meeting.

Mr. Gray exhibited various undescribed *Shells*, chiefly contained in his own collection. He characterized them as follows :

Unio Novæ Hollandiæ. *Un. testâ oblongo-elongatâ, gracili, solidâ ; anticè subcompressâ, lævi, rotundatâ, posticè subventricosâ, productâ, tuberculis magnis inæqualibus in seriebus curvatis radiantibus dispositis ; disco argenteo purpureo maculato, margine inferiore anticè crassissimâ ; dente cardinali anteriore parvo, parùm elevato, bituberculato ; dentibus posterioribus parvis, sub cartilaginis margine posteriore positis ; periostracâ crassâ, nigrâ.*

Hab. in Novæ Hollandiæ flumine Macquarrie, 70 circiter mill. ab ejus ostio.

Anodon Parishii. *An. testâ ovatâ, ventricosâ, solidâ ; anticè compressâ, subproductâ, subgracili, posticè expansâ, dilatatâ, rotundatâ ; margine cardinali rectâ, marginis inferioris dimidium longitudine æquante ; disco margaritaceo-albo ; periostracâ brunneo-nigrescente.*

Long. 7¼, alt. 3¾ poll.

Hab. in fluviis Paraguayæ.

The submarginal scar has an acute inflection under the hinder muscular one; and there are several small unequal scars behind that of the anterior adductor, as well as others, also unequal, under the *umbones*.

Anodon penicillatus. *An. testâ ovatâ, ventricosâ, crassâ, solidiusculâ, lævi ; anticè subcompressâ, rotundatâ, subgracili, posticè obliquè truncatâ ; ad marginem inferiorem posticè dilatato-rotundatâ ; disco albo, lineis angularibus brunneo-nigrescentibus prope cicatricem muscularem submarginalem notato ; periostracâ olivaceâ, lævi.*

Hab. in fluviis Paraguayæ.

The black lines of the inside of the shell are deposited along the upper edge of the submarginal muscular scar, and are gradually covered by the pearly layer deposited by the surface of the mantle over the scar ; the interior ones, being the most thickly covered, are the lightest in colour.

There is a two-lobed oblong muscular scar at the back of the lower edge of that of the anterior adductor. There is also a small deep scar under the front of the *umbones*.

ANODON PORCIFER. *An. testâ ovatâ, subventricosâ, crassâ, solidâ; anticè convexâ, rotundatâ, posticè productâ, porcâ angulari prope depressionem marginis posticæ; margine inferiore posticè subrotundatâ; disco nitidissimo, iridescenti-margaritaceo; periostracâ lævi, nigrâ viridi radiatim pictâ.*

Hab. in fluviis Paraguayæ.

There is only a single small ovate scar behind the lower end of that of the anterior adductor muscle; the part under the *umbones* is destitute of any.

Mr. Gray also exhibited specimens of several *Shells*, which he referred to a genus to be separated from *Helix* under the name of

NANINA.

Helix (pars), *Fér.* Vitrina (pars), *Quoy.*

Animal. Collare amplum, lobo dextro antico, antro respirationis in sinu posito, lobo sinistro postico lato expanso partem inferiorem testæ anfractûs ultimi tegente. Pes posticè truncatus, processu brevi conico dorsali supra truncaturam sito.

Testa depressa, perforata, polita; aperturâ lunatâ; peristomate tenui, edentulo, costâ internâ vel nullâ vel obsoletâ.

Indiæ, Chinæ, &c. Incolæ.

The shells comprised in this genus have been referred by M. De Férussac, and by most authors, to *Helix*: they are, however, more nearly related to *Vitrina*, with which M. Quoy intends placing them. But from the shell of *Vitrina* that of *Nanina* differs by being umbilicated, as well as by its smaller mouth. The lobation of the collar of the animal of *Nanina* distinguishes it also from *Vitrina*; the collar of the latter being entire, with a linear lobe on the side extending over the shell, and with the respiratory hole placed at its base.

The animal was first observed and figured by General Hardwicke in 1797.

The following species belong to the genus:

Nan. Nemorensis. Helix Nemorensis, *Müll.*
Nan. Javanensis. Hel. Javanensis, *Fér.*
Nan. exilis. Hel. exilis, *Müll.*
Nan. citrina. Hel. citrina, *Linn.*
Var. Hel. castanea, *Müll.*
Hel. Rapa, *Chemn.*
Nan. monozonalis. Hel. monozonalis, *Lam.*
Nan. Clairvillia. Hel. Clairvillia, *Fér.*
Nan. Vitrinoides. Hel. Vitrinoides, *Desh.*

NANINA JULIANA. *Nan. testâ solidâ, albâ; spirâ convexiusculâ;*

anfractibus depressis fascid mediand brunned, ultimo anticè roseo fascid brunned axin cingente; peristomate rotundato, roseo.

Axis 11, diam. 20 lin.

Hab. in Ceylon.

This is one of the most beautiful of the genus. It approaches to *Nan. Javanensis*, but is thicker and larger.

NANINA STRIATA. *Nan. testâ solidiusculâ, subpellucidâ, albidâ; periostracâ tenui, olivaceâ; spirâ convexiusculâ, confertim transversè striatâ; anfractu ultimo anticè sublævi.*

Axis 9, diam. 15 lin.

Mr. Gray also exhibited an extensive series of *Shells* of the

Genus TEREBRA,

forming part of his own collection, and illustrating an account of many new species of that group which he presented.

He stated that the animal has a small foot, and a very long *proboscis*, at the base of which are seated two very small *tentacula*; the *operculum* is ovate, thin, horny, rounded behind, and rather tapering in front. The shell is covered by a very thin, pellucid, horn-coloured *periostraca*: it is usually white, variously streaked with brown, the streaks being often interrupted or broken into spots by the two spiral bands of the shell; one of these bands is placed near the spiral groove and the other on the middle of the whorl. The *apex* of the cavity is frequently filled up by a calcareous deposition; but this deposition has never been observed in *Ter. duplicata*.

The species may be divided into the following sections:

I. *Anfractibus sulco spirali cingulum posterius efformante; labio interiore tenui, concavo.*

OBS. Cingulum in junioribus magis conspicuum; labium internum in adultis rarissimè incrassatum.

Huic sectioni referendæ sunt

Ter. maculata, Lam.

Ter. tigrina.—Buccinum felinum, *Dillw.*

Ter. strigata, Sow.—Buccinum elongatum, *Wood, Suppl., f.* 22.

Ter. dimidiata, Lam.

Ter. striatula, Lam.

Ter. flammea, Lam.

Ter. muscaria, Lam.

Ter. subulata, Lam.

Ter. oculata, Lam.

Ter. crenulata, Lam.

Ter. corrugata, Lam.

Ter. duplicata, Lam.

Ter. pertusa, Sow. Born, Mus., t. 10. f. 13.

Ter. nubeculata, Sow.

Ter. myuros, Lam.

TEREBRA KNORRII. *Ter. testâ turritâ, subulatâ, acuminatâ, solidâ,*

politâ; anfractibus planis, superioribus transversè sulcatis; albâ brunneo interruptè trifasciatâ, fasciâ posteriore latâ maculis irregularibus, mediâ angustâ, anteriore latiore maculis quadratis.

Axis 2¼, diam. ¼ unc.

Knorr, Deliciæ, vol. iii. t. 23. f. 3.

This species differs from *Ter. maculata* by being more slender, and by having the front of the whorls spotted. From *Ter. tigrina* it is distinguished by the marbling of the back of the whorls.

TEREBRA AFFINIS. *Ter. testâ turritâ, subulatâ, gracili, solidiusculâ; anfractibus planis, transversè punctato-sulcatis, tenuiter spiraliter striatis, sulco spirali posteriore profundo; aperturâ parvâ; albâ nebulis lineisque spiralibus tribus vel quatuor saturatè rufis.*

Axis 1½ unc.

Var. a. Parva. 1¼ unc.

b. Gracilior. 1 unc.

Allied to *Ter. nubeculata*, but smaller and more slender in its proportions.

TEREBRA RUDIS. *Ter. testâ turritâ, subulatâ, longitudinaliter plicatâ, spiraliter sulcatâ, cancellatâ; anfractibus planis, cingulo posteriore convexiusculo, noduloso; aperturâ mediocri; pallidè flavâ, apice flavo.*

Axis 1¼ unc.

TEREBRA STRIATA. *Ter. testâ turritâ, subulatâ, gracillimâ, lævi, striis spiralibus distantibus; anfractibus convexiusculis, sulcis curvatis distantibus, cingulo parum noduloso, superioribus profundè sulcatis cinguloque altero albo-noduloso, ultimo anticè striis spiralibus frequentibus; aperturâ minimâ; pallidè brunneâ.*

Axis 1¼ unc.

Resembles *Ter. affinis*, but the grooves are not punctate.

TEREBRA UNDULATA. *Ter. testâ turritâ, subulatâ, gracillimâ, longitudinaliter undatâ, plicis angularibus lævibus, interstitiis linearibus rufis minutè punctatis; anfractibus planiusculis, serie posticâ tuberculorum alborum majusculorum; aperturâ parvâ; pallidè flavâ.*

Axis 1¼ unc.

TEREBRA ALBA. *Ter. testâ turritâ, subulatâ, costis longitudinalibus spiralibusque frequentibus cancellatâ; anfractibus planis, cingulo convexiusculo; aperturâ parvâ; albâ.*

Axis ¾ unc.

TEREBRA FLAVA. *Ter. testâ turritâ, ovato-subulatâ, longitudinaliter plicatâ plicis frequentibus æqualibus, striis spiralibus frequentibus punctatis; anfractibus planis, cingulo convexiusculo; pallidè flavâ.*

Axis 1 unc.

Var. Subulata, gracilis, costis longitudinalibus magis acutis.

TEREBRA PUNCTATOSTRIATA. *Ter. testâ turritâ, subulatâ, gracili, tenui, lævi, striis spiralibus distantibus punctatis, sulco spirali posteriore profundiore; anfractibus convexiusculis, ad suturam subcrenulatis, superioribus profundè punctatis; aperturâ angustâ; pallidè rufo-flavâ.*

Axis 2¼ unc.

TEREBRA GRACILIS. *Ter. testâ turritâ, lineari-subulatâ, pellucidâ, lævi, politâ, tenuiter spiraliter striatâ, plicis longitudinalibus distantibus; anfractibus subplanis, sulco posteriore profundo; cinereâ, anfractu ultimo antucè purpureo.*

Axis 1 unc.

Hab. ad Africæ oras.

TEREBRA TESSELLATA. *Ter. testâ turritâ, subulatâ, lævi; anfractibus planis, cingulo convexo noduloso albo, superioribus cingulo altero etiam noduloso; albâ brunneo interruptè trifasciatâ, maculis æqualibus quadratis.*

Axis (an junioris?) 1 unc.

This differs from all the other spotted species by the hinder belt being destitute of spots: the belt is also more nodulose than in the other species which are marked with spots.

TEREBRA VARIEGATA. *Ter. testâ turritâ, subulatâ, costis spiralibus vix prominentibus parùm nodulosis; anfractibus planis; albâ vel viridescente, seriebus tribus macularum brunnearum, maculis posterioribus quadratis inter cinguli nodulos compressos, cæteris oblongis transversis.*

Axis 2¼ unc.

Var. Pellucida, albida brunneo maculata, nodulis albis opacis.

TEREBRA PLICATA. *Ter. testâ turritâ, ovato-subulatâ, tenui, tenuiter spiraliter striatâ, costis longitudinalibus undatis albis subdistantibus; anfractibus planis, cingulo subelevato costato, suturâ crenulatâ; aperturâ mediocri; pallidè brunneâ.*

TEREBRA PUNCTATA. *Ter. testâ turritâ, subulatâ, gracili, acuminatâ, lævi; anfractibus planis, cingulo subangusto noduloso, superioribus cingulo altero etiam noduloso; aperturâ parvâ; pallidè flavescente, seriebus quatuor macularum brunnearum parvarum in strigas aliquando confluentium.*

TEREBRA LÆVIGATA. *Ter. testâ turritâ, subulatâ, gracillimâ, tenui, lævi, tenuissimè striatâ; anfractibus planis, in medio subcarinatis, cingulo lævi subelevato porcâ carinatâ utrinque aucto; anfractu ultimo haud carinato; aperturâ minimâ; albidâ.*

Axis 1¼ unc.

TEREBRA LÆVIS. *Ter. testâ turritâ, subulatâ, lævi; anfractibus subconcavis, in medio subcarinatis, superioribus transversè sul-*

catis, cingulo albo opaco angusto lævi sulco subprofundo anticè porcâque angustissimâ carinatâ posticè aucto; albâ flavescente variâ.

Axis 1¼ unc.

II. *Anfractibus sulco spirali cingulum posterius efformante; labio interiore incrassato subelevato.*

Obs. Quoad aperturam *Cerithia* quodammodo simulantes.

Huic sectioni referendæ sunt

Ter. cerithina, Lam.

Ter. tricolor, Sow.—*Ter. tæniolata*, Quoy, cui proprii sunt insuper sulcum cingulum efformantem sulci alii spirales duo.

Terebra anomala. *Ter. testâ turritâ, subulatâ, lævi, politâ; anfractibus planis, sulco spirali postico profundo crenato, posticè longitudinaliter plicatis; aperturâ anticè subeffusâ, posticè angustatâ acutissimâ, labio interiore præsertim posticè incrassato; albâ, fasciâ latissimâ subposticâ alteráque angustiore anticâ cinereis vel brunneis, apice acutissimo brunneo.*

Axis 1¼ unc.

Terebra ornata. *Ter. testâ turritâ, ovato-subulatâ, solidâ; anfractibus planis, sulco spirali posteriore profundo, cingulo convexo subnoduloso; aperturâ ovatâ, labio interiore subincrassato declivi; albâ, seriebus quatuor macularum parvarum brunnearum quadratarum, serierum intermediarum maculis nonnunquam in strigas oblongas confluentibus.*

Axis 4 unc.

Terebra cancellata. *Ter. testâ turritâ, subulatâ, sulcis spiralibus frequentibus profundis, plicis longitudinalibus æqualibus subconfertis; anfractibus planis, sulco posteriore profundo; aperturâ subparvâ, labio interiore incrassato elevato; pallidè cinereâ.*

Axis 1¼ unc.

Terebra straminea. *Ter. testâ turritâ, subulatâ, subrugosâ, spiraliter confertim sulcatâ; anfractibus subplanis, cingulo postico subelevato obliquè transversim sulcato alteroque nodulorum magis rotundatorum; aperturâ parvâ, labio interiore posticè subcalloso; flavescente.*

Axis 2¼ unc.

Terebra triseriata. *Ter. testâ turritâ, subulatâ, gracillimâ, subcylindricâ, costis spiralibus subgranulosis confertis; cingulo postico convexo noduloso, ante hoc altero subangustiore, et tertio minore pone; aperturâ minimâ, labio interiore subincrassato; pallidè flavescente.*

Axis 1¼ unc.

III. *Anfractibus sulco postico nullo.*

* *Labio interiore tenui.*

a. *Testâ elongatâ, gracili.*

Ter. lanceolata, Lam.
Ter. strigillata, Lam.
Ter. hastata, Lam.—Ter. costata, *Mœnch.*

TEREBRA ALBIDA. *Ter. testâ turritâ, ovato-subulatâ, acuminatâ, lævi; anfractibus planis, suturâ subimpressâ; pallidè flavescenti-albidâ.*
Axis 1¼ unc.

b. *Testâ brevi.*

Ter. aciculata.—Buccinum aciculatum, *Lam.*
Ter. polita.—Buccinum politum, *Lam.*

** *Labio interiore incrassato, elevato; testâ brevi.*

OBS. *Nassæ* quodammodo affines; sed neque labium internum dilatatum, nec externum incrassatum.
Ter. lineolata, Sow. Wood, Suppl., f. 22.
Ter. Tahitensis.—Buccinum Tahitense, *Gmel.*—Buccinum Australe, *Sow.*
Mr. Gray concluded by stating that specimens of all the species of *Terebra* enumerated by him are contained either in his private collection or in the British Museum.

Mr. Gray also exhibited an extensive series of *land* and *freshwater Shells* which he regarded as hitherto undescribed. He characterized them as follows:

HELICOPHANTA FALCONERI, Reeve, MSS. *Hel. testâ ovatâ, tenui, vesiculari, profundè umbilicatâ; pallidè brunneâ, fasciis maculisque prope suturam saturatioribus; apice obtuso; anfractibus quatuor convexis, ultimo anticè declivi; umbilico magno, compresso; peristomate simplici, fauce albâ.*
Hab. in Novâ Hollandiâ.
This species is very nearly allied to *Hel. magnifica*, Fér., Moll., t. 10. f. 10, but differs in being much more umbilicated and ventricose, having a greater number of whorls, and being deeper coloured.

ZONITES WALKERI. *Zon. testâ depressâ, umbilicatâ, politâ, flavo-brunneâ; anfractibus 3½ citissimè majoribus, ventricosis, tenuiter concentricè striatis; dorso striis densis spiralibus; umbilico profundo; aperturâ magnâ, fauce albidâ.*
Axis 8 lin., diam. 1 unc.
Hab. in Novâ Hollandiâ, 70 millia passuum circiter a Fort Macquarrie.
This species is allied in form and size to *Zon. fuliginosus* of North

America, but differs in the back of the whorls being cancellately striated, and in the mouth being larger and more rounded.

BULIMUS ATOMATUS. *Bul. testâ ovatâ, acutâ, tenui, imperforatâ, pallidè brunneâ, punctis brunneis triangularibus sæpe strigosis notatâ; spirâ obtusè conicâ; anfractibus paulum elevatis; aperturâ elongatâ, tertiâ parte spiram superante; peristomate simplici; labio interno subreflexo; columellâ anticè rectâ; fauce albo.*

Axis 2¼, diam. 1¼ unc.

Hab. in Novâ Hollandiâ, 70 millia passuum circiter a Fort Macquarrie.

The three following species were discovered in the interior of New Holland by Mr. Allan Cunningham, and two of them have been figured, but not described, in Mr. Griffith's Edition of Cuvier's 'Animal Kingdom.'

HELIX CUNNINGHAMI, Gray, in Griff. Anim. Kingd., t. 6. f. 4. *Hel. testâ valdè depressâ, albo brunneoque fasciatâ; spirâ planiusculâ; anfractibus paulum convexis, ultimo depressissimo, rotundato; umbilico latissimo anfractus omnes monstrante; aperturâ oblongâ, deflexâ; labio externo reflexo, subincrassato, dextrorsum rotundato, sinistrorsum complanato recto; fauce purpurascente.*

Axis 11, diam. 29, aperturæ diam. 12¼ lin.

Hab. in Novâ Hollandiâ, in sylvis densis obscuris apud Hay's Peak.

This species varies in the size of its brown bands, some individuals being nearly white with a few narrow brown bands in the centre of the last whorl; while in others the bands spread over the whole upper part and the upper half of the lower portion of that whorl. It is allied to *Hel. sepulchralis* in form, but is larger and has no keeled band round the *umbilicus*, which is also wider; and to *Hel. Radama*, Less., Cent. Zool., t. 9, from Madagascar, which differs from it in being thinner, of a uniform brown colour, and having a larger mouth, the front of the whorls near the *umbilicus* appearing also to be constantly white.

HELIX FRASERI, Gray, in Griff. Anim. Kingd., t. 6. f. 6. *Hel. testâ globosâ, imperforatâ, pallidè brunneâ fasciis plurimis angustis linearibus spiralibus brunneis; spirâ convexâ, hemisphæricâ; anfractibus rotundatis, ultimo maximo ventricoso; aperturâ oblongâ, semilunatâ; labio externo rotundato, reflexo, subincrassato, purpurascenti-brunneo; interno vix incrassato.*

Axis 19, diam. 24, aperturæ lat. 12, long. 14 lin.

Hab. in Novâ Hollandiâ.

This species most nearly resembles *Hel. crispata*, but is larger and more globular; the whorls are more ventricose, and the bands continuous: it is covered with a thin greenish horny *periostraca*.

Helix Jacksoniensis. *Hel. testâ depressâ, pallidè brunneâ, politâ, concentricè substriatâ; spirâ convexâ; anfractibus planis, ultimo rotundato, depresso; aperturâ lunatâ; fauce albidâ; labio externo tenui.*

Axis 3, diam. 3¼ lin.

Hab. in Novâ Hollandiâ, prope Port Jackson.

The shell resembles *Hel. nitida* in form, but is imperforate.

To Mr. Cunningham Mr. Gray was also indebted for three species discovered by him in Phillip's Island, a small island about 5 miles South of Norfolk Island. These he characterized as follows:

Helix Campbellii. *Hel. testâ conicâ, subglobosâ, depressiusculâ, imperforatâ, subrugosâ, rugis transversis densis, striisque spiralibus indistinctis; pallidè brunneâ, fasciâ latâ subpostica pallidâ; spirâ conicâ, convexâ; anfractibus planiusculis, ultimo carinâ mediana indistinctâ, anticè lævi; peristomate tenui, acuto, juxta axin subincrassato, albo.*

Axis 5½, diam. 8¼ lin.

Hab. in Insulâ Phillip Maris Pacifici.

Helix Phillipii. *Hel. testâ subglobosâ, depressâ, imperforatâ, pallidè corneâ, pellucidâ, maculis viridibus sparsis irregularibus; transversim subdistanter rugosâ; spirâ convexâ; anfractibus planiusculis, ultimo parum ventricoso, rotundato, fasciâ postica submediana angustâ albâ; aperturâ semilunatâ; labio tenui, supra axin subincrassato, albo.*

Axis 5, diam. 8 lin.

Hab. in Insulâ Phillip.

Jun. *spirâ planiusculâ, anfractu ultimo subcarinato.*

This species is allied to the former in the shape of the mouth and structure of the lip; but the whorls are angular in the young state only, as in most of the *Helices* of Lamarck.

Carocolla Stoddartii. *Car. testâ conico-subglobosâ, depressiusculâ, tenuissimè rugosâ, brunneâ pallidè fasciatâ vel flavescente fasciis saturatioribus, imperforatâ; spirâ conicâ, convexâ; anfractibus planiusculis, ultimo indistinctè in medio carinato; peristomate tenui, juxta axin subincrassato, acuto.*

Axis 4, diam. 7 lin.

Var. 1. *Testâ saturatè brunneâ, fasciâ prope suturam latiusculâ.*

Var. 2. *Testâ supra brunneâ, infra flavescente, fasciâ pone carinam latâ brunneâ.*

Var. 3. *Testâ pallidè flavâ, fasciâ ante carinam latâ brunneâ.*

Var. 4. *Testâ pallidè flavâ supra brunneo subnebulosâ.*

Hab. in Insulâ Phillip.

The remaining species were described from specimens in Mr. Gray's own collection; they were characterized as follows:

Bulimus rhodostomus. *Bul. testâ ovatâ, perforatâ, solidâ,*

striatâ, albidâ roseo marmoratâ, periostracâ tenui olivaceâ; suturâ tenuiter crenulatâ; anfractibus fasciis duabus posticis obscuris latis; fauce roseâ; peristomate paulum incrassato; axi anticè saturatè brunneâ.

Axis 1¼, diam. ⅓ unc.

Hab. in Novâ Hollandiâ?

Bulimus crassilabris. *Bul. testâ ovatâ, acutâ, lævi, politâ, albâ brunneo parum tinctâ; spirâ conicâ, apice obtuso subproducto; anfractibus convexiusculis; aperturâ parvâ; labio externo subincrassato, interno incrassato, calloso, subrepando, perforationem parvam linearem fere tegente.*

Diam. ⅓ unc.

Bulimus apiculatus. *Bul. testâ ovatâ, elongatâ, perforatâ, lævi, albâ, strigis brunneis obliquis; spirâ conicâ, apice acutiusculo, saturatè brunneo; ultimo anfractu obsoletissimè albo carinato; aperturâ spirâ breviore, subangustâ; labio externo simplice, interno tenui, ante columellam parum reflexo, saturatè brunneo.*

Axis 10, diam. 4¼ lin.

This shell resembles *Bul. Kingii*, but is more solid and has a dark *apex* and pillar.

Bulimus Pullus. *Bul. testâ ovatâ, subcylindricâ, subimperforatâ, pellucidâ, albidâ, tenuiter striatâ; apice conico, obtusiusculo, pellucido; anfractibus novem vel decem vix elevatis; aperturâ parvâ, subrotundâ, semilunatâ; labiis subincrassatis rotundatis.*

Axis 8, diam. 2¼ lin.

Hab. " in Indiâ Orientali ad ripas Gangis," Dr. Royle.

It varies greatly in size, and is often much smaller.

Bulimus Burchellii. *Bul. testâ ovato-lanceolatâ, imperforatâ, albâ, rugosiusculâ; apice obtuso, subattenuato; anfractibus convexiusculis; aperturâ ovatâ, spirâ tertiâ parte breviore; labiis parum incrassatis, albis.*

Axis 7, diam. 2¼ lin.

Jun. *anfractibus angulariter subcarinatis, labiis tenuibus.*

Hab. in Africâ Australi, prope Lattakoo.

The specimens were strung together to form a necklace.

Lignus tenuis. *Lign. testâ ovatâ, subturritâ, tenuissimâ, albâ, pellucidâ, periostracâ tenui glabrâ flavâ indutâ; spirâ conicâ, apice obtuso, subproducto; anfractibus convexis, ultimo obsoletissimè carinato, anticè purpurascenti-brunneo; columellâ antice tenui, rectiusculâ.*

Axis 15, diam. 9 lin.

Hab. in Africâ?

This shell is in shape most like the young of *Hel. flammigera*, Fér., Moll., t. 118, f. 5; but differs in colour, in tenuity, and in the shape of the front of the pillar-lip.

Helix Codringtonii. *Hel. testâ orbiculari, conicâ, imperforatâ, solidiusculâ, pallidâ irregulariter densè albo lineatâ; spirâ convexâ; anfractibus rotundatis, ultimo depressiusculo; aperturâ lunatâ, ovatâ, obliquâ; labio externo reflexo, albo, anticè planiusculo, declivi, interno tenui.*

Axis 15, diam. 20 lin.

Hab. "in Græciâ apud Navarino," S. P. Pratt, Esq.

Helix fidelis. *Hel. testâ depressiusculâ, latè perforatâ, pallidè brunneâ, profundè striatâ, periostracâ tenui pallidâ indutâ; spirâ conicâ, convexâ; anfractibus elevatiusculis, citissimè majoribus, fasciâ suturali notatis, ultimo rotundato anticè brunneo; aperturâ obliquâ; peristomate albo, subreflexo; fauce posticè albâ, anticè brunneâ.*

Axis 11, diam. 15 lin.

Var. *spirâ paulo depressiore.*

Helix Cracherodii. *Hel. testâ depressâ, tenui, latè perforatâ, striatâ, pellucidâ, albidâ præsertim ad spiram rufescenti-brunneo variegatâ; spirâ convexâ; anfractibus elevatiusculis, ultimo obsoletissimè carinato, fasciâ mediânâ albâ; peristomate simplici; fauce brunneâ, maculâ albâ in labii medio.*

Axis 9, diam. 14 lin.

Hab. in Indiâ Orientali?

This is perhaps a *Nanina*, but it is more largely perforated than any of that genus of which I have seen the animal.

Helix Maderaspatana. *Hel. testâ globosâ, depressâ, perforatâ, pallidè brunneâ albido marmoratâ, substriatâ; spirâ elevatiusculâ; anfractibus rotundatis, cito majoribus, ultimo ventricoso, fasciâ albidâ submediânâ, anticè pallidiore; aperturâ semilunatâ, majusculâ; peristomate subincrassato, albido; perforatione profundâ, angustâ.*

Axis 9, diam. 13 lin.

Hab. "in Indiâ Orientali, 200 millia passuum circiter a Maderaspatanâ versus Africum," J. W. Heath, Esq.

While on the subject of Indian *Helices*, Mr. Gray remarked that *Hel. ligulata*, Fér., Moll., t. 31. f. 2, 3, is a common Indian species; and that *Hel. cicatricosa*, Chemn., vol. ix. t. 109. f. 913, is found in the more elevated regions of India, and has lately been described by Mr. Lea under the name of *Hel. Himalayana*.

Carocolla Novæ Hollandiæ. *Car. testâ orbiculari, conicâ, subdepressâ, subperforatâ, tenui, lævi, tenuissimè elevato-punctatâ, pallidè fulvâ; spirâ conicâ, convexâ; anfractibus sex distinctis, fasciâ brunneâ submediânâ; ultimo pallidè angulariter carinato, anticè convexo, circum axin saturatè brunneo; aperturâ subangulatâ; peristomate pone carinam subinflexo, subincrassato, reflexo, nigro; labio interno tenui, brunneo; fauce albidâ, fasciâ pellucidâ.*

Axis 9, diam. 14 lin.

Hab. in Novâ Hollandiâ, 200 millia passuum ab Ostio Fluvii Macquarrie.

HELIX GRANIFERA. *Hel. testâ conicâ, orbiculari, depressiusculâ, imperforatâ, pallidè brunneâ, granis minutis albis aspersâ; spirâ convexâ, obtusâ; anfractibus vix elevatis, ultimo acutè carinato, anticè convexiusculo; aperturâ ovato-trigonâ; labiis incrassatis, reflexis, albis, externo anticè recto, inæqualiter 3-dentato, dentibus duobus internis obliquis approximatis, externo majore distante compresso.*

Axis 7, diam. 11 lin.

Hab. vulgaris in Indiâ Occidentali.

HELIX PACHYGASTRA. *Hel. testâ orbiculari, depressâ, imperforatâ, badiâ, lævi, tenuiter striatâ; spirâ convexiusculâ; anfractibus planis, ultimo ventricoso, rotundato, obsoletissimè in medio carinato; aperturâ subtrigonâ; labiis incrassatis callosis, externo anticè intùs dente parvo extus plicâ majore instructo.*

Axis 4½, diam. 8 lin.

Mr. Gray observed on this character that he calls that a tooth which is solid, and that a plait which is marked externally by a corresponding groove. Thus the *Chondri* of Cuvier have toothed mouths, and the *Pupæ* and *Clausiliæ* plaited.

The exhibition was resumed of the new species of *Shells* contained in the collection formed by Mr. Cuming, chiefly on the Western Coast of South America and among the islands of the South Pacific Ocean. Those brought on the present occasion under the notice of the Society were accompanied by observations and characters by Mr. G. B. Sowerby, and comprised the following species of the

Genus PHOLAS.

"The utmost caution is necessary in the examination and description of the various sorts of *Pholades*, on account of the extraordinary difference in the form of the same species in different stages of growth. The addition of accessory valves also, as they increase in age, must be carefully observed, in order to guard against too implicit a confidence in their number and form. And though I might be considered guilty of asserting a truism by stating that the difference in size of different individuals of the same species may and sometimes does mislead the tyro in the science of Malacology; lest such difference should mislead the adept also, let him too proceed cautiously, and when he finds a fully grown shell of half an inch in length agreeing perfectly in proportions and characters with another of two inches long, let him not conclude that it is a distinct species, but if he can find no other difference except that which exists in their dimensions, let him consider the one a giant, the other a dwarf. Let it be remembered that among the *Cyprææ* it is not un-

common to observe young shells of three inches in length, and fully grown ones of the same sort only one inch in length; likewise, of the well-known British *Pholades* there are individuals quite in a young state of two inches in length, and perfectly formed shells of the same species not more than half an inch long. For an instance in demonstration I need only refer to the *Phol. papyraceus*, so abundant at Torquay, of which the young shells have been considered by many as a distinct species and have been named by Dr. Turton *Phol. lamellosus*. This varies in size exceedingly, so that it may be obtained both in an incomplete and young state and in a fully grown condition from half an inch to nearly two inches in length. The circumstance of its having rarely occurred in an intermediate state of growth, when the anterior opening is only partly closed and the accessory valves only partly formed, led Dr. Turton and others to persist in regarding the young and old as two distinct species. Other similar instances will be shown in the course of the present concise account of some hitherto undescribed species of the same genus brought to England by Mr. Cuming."—G. B. S.

PHOLAS CRUCIGER. *Phol. testâ oblongâ, scabrâ, marginibus anticâ ventrali apertâ, anticâ dorsali reflexâ; valvâ accessoriâ solitariâ, posticâ, transversâ: long.* 1·7, *lat.* 0·65, *alt.* 0·7 *poll.*

Hab. ad oras Columbiæ Occidentalis et Americæ Centralis.

In this species the anterior ventral opening is somewhat more closed in some specimens than in others. It appears to form only one accessory valve, which crosses the valves behind the *umbones*; the dorsal margins are closed by *epidermis*.

Found in three localities; namely, in soft sandstone at half-tide on the shores of the island of Puna in the Gulf of Guayaquil; in soft stone at low water in the Bay of Caraccas; both in West Columbia; and in hard clay at a depth of thirteen fathoms in the Gulf of Nocoiyo in Central America.—G. B. S.

PHOLAS CHILOENSIS, var. parva. *Phol. Chiloensis, testâ parvâ, tenuiore: long.* 1·6, *lat.* 0·6, *alt.* 0·6 *poll.*

Found in soft stone at a depth of seventeen fathoms at the island of Plata, West Columbia.—G. B. S.

PHOLAS SUBTRUNCATA. *Phol. testâ ovato-oblongâ, scabrâ, posticè rotundato-subtruncatâ, lævi; margine anticâ ventrali hiatu maximo; valvâ accessoriâ solitariâ, anticâ, lanceolatâ, anticè acuminatâ: long.* 1·9, *lat.* 0·9, *alt.* 0·8 *poll.*

Hab. ad Insulam Platæ, Columbiæ Occidentalis.

Found in soft stone at a depth of seventeen fathoms. Very like our British *Pholas parva*.—G. B. S.

PHOLAS CALVA, Gray, MSS. *Phol. testâ ovatâ, anticè retusâ, posticè subacuminatâ, hiante; valvis singulis in areas tres divisis; areis, anticâ scabriusculâ; intermediâ epidermide corneâ lon-*

gitudinaliter striatâ indutâ; posticâ squamis corneis, posticè rotundatis, imbricatis, lævibus, gradatim minoribus, ornatâ; parte anticâ ventrali clausâ lævigatâ; valvâ accessoriâ anticâ dorsali maximâ, lævi, quinquelobatâ; marginibus dorsali ventralique posticis epidermide corneo-testaceâ obtectis: long. 2·, *lat.* 1·, *alt.* 1·1 *poll.*

Hab. ad Sinum Panamæ.

Obs. Testæ junioris parte anticâ ventrali apertâ, hiatu maximo; valvâ accessoriâ nullâ, marginibus dorsali ventralique posticis haud obtectis: long. 1·5, lat. 0·7, alt. 0·7 poll.

This is another remarkable instance of extreme dissimilarity between the young and fully grown shells; the large anterior ventral opening, so conspicuous in the young shell, being completely closed up in the fully grown individual; the enormous accessory valve covering the *umbones* and spreading widely over the anterior dorsal parts of the shell is also a remarkable addition formed at its full growth.

Found in *Spondyli*, at a depth of twelve fathoms, at the Isle of Perico in the Bay of Panama: the young shells have also been taken out of hard stones at low water in the same place.—G. B. S.

Pholas calva, var. nana. *Phol. calva, testâ nanâ: long.* 0·5, *lat.* 0·25, *alt.* 0·25 *poll.*

Hab. ad Panamam.

Found in hard stones at low water.—G. B. S.

Pholas acuminata. *Phol. testâ ovatâ, anticè rotundatâ, posticè acuminatâ, hiatu minimo; valvis singulis in areas tres divisis; areis, anticâ scabriusculâ; intermediâ epidermide corneâ longitudinaliter striatâ indutâ; posticâ squamis corneis, posticè acuminatis, imbricatis, lævibus, gradatim minoribus, ornatâ; parte anticâ ventrali clausâ, lævigatâ; valvâ accessoriâ anticâ dorsali magnâ, subtetragonâ, anticè unilobatâ; marginibus ventrali dorsalique epidermide corneo-testaceâ obtectis, tegmine dorsali anticè inflato: long.* 2·, *lat.* 0·9, *alt.* 0·9 *poll.*

Hab. ad Panamam.

Found in limestone at low water. The same sort of difference is observable between the young and fully grown shells in this species as in *Phol. calva*.

One specimen of this shell in Mr. Cuming's collection merits particular notice. It demonstrates a fact of considerable importance to geologists. It is in argillaceous limestone, very much resembling lias, and in forming the cavity in which it resides, it has, by such chemical process as frequently takes place, absorbed a much greater quantity of the rock than could be retained or converted; this is again deposited at the upper part of the cavity; and thus the rock is recomposed.—G. B. S.

Pholas melanura. *Phol. testâ ovatâ, anticè rotundatâ, posticè obtusâ, hiatu mediocri; valvis fasciâ impressâ transversim sul-*

catâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali radiatim corrugatâ, parte anticâ ventrali tenuiore, inflatâ; posticâ longitudinaliter striatâ, posticè epidermide nigrâ indutâ; margine dorsali anticâ inflato-reflexâ; valvis accessoriis duabus, posticis, subtrigonis, supernè fornicatis: long. 1·4, *lat.* 0·75, *alt.* 0·8 *poll.*

Hab. ad Montem Christi, Columbiæ Occidentalis.

Found in hard clay at low water.—G. B. S.

Pholas tubifera. *Phol. testâ oblongâ, posticè subattenuatâ, subtruncatâ, anticè rotundatâ; valvis fasciâ transversim sulcatâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali radiatim sulcatâ, decussatâ, parte anticâ ventrali tenuiore, subinflatâ; posticâ longitudinaliter striatâ; margine dorsali anticâ reflexo-inflatâ; valvis accessoriis dorsalibus duabus, posticis, subovatis; epidermide posticè in duas valvas planulatas decurrente, deinde tubulum calcareum ad extremam partem conspicuum: long.* 1·3, *lat.* 0·5, *alt.* 0·45 *poll.*

Hab. ad Sinum Caraccensem, Columbiæ Occidentalis.

Obs. Testa intermediæ ætatis tubulum caret.

Found in decayed wood dredged up at ten fathoms' depth.

A marked resemblance may be easily traced between this and the *Pholas papyracea* of Southern Devonshire.

Pholas Quadra. *Phol. testâ oblongâ, tenuissimâ, anticè inflatâ, rotundatâ, posticè subattenuatâ, subtruncatâ; valvis fasciâ transversim sulcatâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali concentricè lamellosâ, lamellis squamuliferis, parte anticâ ventrali tenuiore, inflatâ, radiatim obsoletè costellatâ; posticâ longitudinaliter sulcatâ; margine dorsali anticâ concavo-reflexâ, musculum recipiente, epidermide obtectâ; epidermide posticè in vesiculas quatuor, undique duas, decurrente; deinde tubulum calcareum ad extremam partem conspicuum: long.* 1·, *lat.* 0·3, *alt.* 0·3 *poll.*

Hab. ad Montem Christi, Columbiæ Occidentalis.

Found in stones at low water.—G. B. S.

Pholas Quadra, var. *Phol. Quadra, testâ parvâ, margine dorsali anticâ inflato-reflexâ.*

Hab. ad Montem Christi.

This variety differs only in the circumstance of the *epidermis* which covered the muscle contained in the concave reflected anterior dorsal margin being changed into calcareous matter. The young shells are without any tube or other accessory parts.—G. B. S.

Pholas curta. *Phol. testâ ovali, posticè acuminatâ, anticè rotundatâ; valvis fasciâ transversim sulcatâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali longitudinaliter striatâ et radiatim corrugatâ, parte anticâ ventrali tenuiore, subinflatâ;*

posticâ concentricè striatâ; valvâ accessoriâ solitariâ, dorsali, anticâ, utrâque extremitate subacuminatâ, medio coarctatâ; marginibus ventrali dorsalique epidermide corneo-testaceâ obtectis, parte dorsali posticè furcatâ: long. 0·6, *lat.* 0·3, *alt.* 0·35 *poll.*

Hab. ad littora Columbiæ Occidentalis.

From the Isle of Lions, Province of Veragua, in soft stone at low water.—G. B. S.

Pholas cornea. *Phol. testâ oblongâ, tenui, anticè rotundatâ, posticè obtusâ; epidermide tenui corneâ indutâ; valvis fasciâ dimidiatis; aream anticâ obliquè divisâ, parte posticâ dorsali rugosiusculâ, parte anticâ lævi; aream posticam majore, lævigatâ; valvis accessoriis tribus, anticâ dorsali rotundatâ, posticè subemarginatâ, anticè subacuminatâ; hiatu postico magno: long.* 0·9, *lat.* 0·5, *alt.* 0·5 *poll.*

Hab. ad littora Columbiæ Occidentalis.

Found in the trunk of a tree at low water at Chiriqui in the province of Veragua.—G. B. S.

The whole of the *Toucans* of the Society's collection were exhibited in illustration of an account given by Mr. Gould, at the request of the Chairman, of the species of *Ramphastos*, Ill., and *Pteroglossus*, Ej., constituting the family *Ramphastidæ*. Mr. Gould's attention having been of late particularly directed to this family in the preparation of a Monograph of it, illustrated by coloured figures of all the birds comprised in it, he was enabled to state the existence of the under-mentioned species of the

Fam. Ramphastidæ, *Vig.*

Rostrum magnum, ad basin nudum; *tomiis* serratis.
Lingua pectinata.
Pedes scansorii.

Genus Ramphastos, *Ill.*

Ramphastos (pars), *Linn.*

Rostrum maximum.
Nares frontales, prope basin maxillæ sitæ.
Cauda æqualis.
Nigri, torque pectorali tectricibusque caudæ inferioribus coccineis, pedibus cæruleis. Rostrum, guttur, tectrices caudæ superiores, orbitæque nudæ discolores.

* *Caudæ tectricibus superioribus flavis.*

Ramphastos erythrorhynchus, Gmel. *Ramph. rostro rubro, culmine fasciâque basali flavis, hâc posticè linea anticè fasciâ tomiisque nigris.*

Long. tot. 23 poll.; *rostri*, 6½; *alæ*, 8½; *caudæ*, 6½; *tarsi*, 2.

Red-beaked Toucan, *Edw., Gleanings, t.* 238.—*Lath., Syn., tom.* i. *p.* 328.

Ramphastos erythrorhynchus, *Gmel. et Auct.*

Tucana Cayennensis gutture albo, *Briss., Orn., tom.* iv. *p.* 416. *t.* 31. *f.* 2.

Toucan, *Le Vaill., Ois. de Par., tom.* ii. *t.* 3.

Toucan à collier jaune ? *Id., Ib., t.* 4.

Toucan à gorge blanche de Cayenne, appellé Toucan, *Buff., Pl. Enl., n.* 262.

Ramphastos Levaillantii ? *Wagl., Syst. Avium.*

Hab. in Cayennâ, Guianâ, et ad ripas fluvii Amazonum.

Descr. Torques pectoralis mediocris. Irides rubræ. Orbitæ cœruleæ. Guttur album sulphureo nonnunquam tinctum.

Ramphastos Cuvieri, Wagl. *Ramph. rostro nigro, culmine fasciâque basali luteis, lateribus convexis.*

Long. tot. 24 poll.; *rostri,* 7½; *alæ,* 9; *caudæ,* 6½; *tarsi,* 2.

Ramphastos Cuvieri, *Wagl., Syst. Avium.*

Hab. propè fluvium Amazonum ?

Descr. Præcedenti coloribus simillimus; sed paullò major, rostrique colores alii. Tectrices caudæ superiores aurantio tinctæ.

Ramphastos culminatus, Gould. *Ramph. rostro nigro, culmine fasciâque basali stramineis, lateribus compressis subconcavis.*

Long. tot. 18—20 poll.; *rostri,* 4—5; *alæ,* 8½—9; *caudæ,* 6½—7; *tarsi,* 2.

Ramphastos culminatus, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 70.

Descr. Præcedenti simillimus, sed minor; mandibula superior compressa, nec ad latera convexa. Tectrices caudæ superiores postiùs in aurantio-coccineum vergentes.

** *Caudæ tectricibus superioribus albis.*

Ramphastos Swainsonii, Gould. *Ramph. rostro obliquè dimidiatim flavo, torque pectorali lineâ albâ anticè auctâ.*

Long. tot. 18 unc.; *rostri,* 5½—6; *alæ,* 9; *caudæ,* 6½; *tarsi,* 1½.

Ramphastos Swainsonii, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 29.

Tocard ? *Le Vaill., Ois. de Par., tom.* ii. *pl.* 9.

Ramphastos ambiguus ? *Swains., Zool. Ill., pl.* 168.

Hab. in Columbiâ et in Mexico Australi.

Descr. Rostri pars superior flava; pars inferior (pro tempestate ?) colore variat, quippe aliquando nigra, aliquando rufa nigro, præsertim anticè, cincta. Guttur flavum, a torque pectorali coccineâ lineâ albâ sejunctum. Irides, orbitæque cœruleæ.

Ramphastos carinatus, Swains. *Ramph. rostro ad apicem sanguineo, mandibulâ superiore viridi culmine maculâque irregulari utrinque ad tomium flavis, inferiore cæruleâ.*

Long. tot. 20 unc.; *rostri*, 6; *alæ*, 8; *caudæ*, 7; *tarsi*, 2.
Ramphastos carinatus, *Swains., Zool. Ill., pl.* 45.
Brazilian Pie, *Edw., Glean., vol.* ii. *t.* 64.
Yellow-breasted Toucan, *Id., Ib., vol.* iii. *p.* 253. *t.* 329. (adultus).
Ramphastos Tucanus?, *Shaw, Gen. Zool., vol.* viii. *p.* 362.
Hab. in Mexico.
Descr. Præcedenti coloribus simillimus. Linea alba pectoralis nulla. Rostrum pluricolor compressum, fasciâ angustâ basali nigrâ cinctum.

Ramphastos Toco, Gmel. *Ramph. caudæ tectricibus superioribus caudæ dimidium longitudine æquantibus.*
Long. tot. 27 unc.; *rostri*, 7½; *alæ*, 10; *caudæ*, 7; *tarsi*, 2.
Toucan de Cayenne appellé Toco, *Buff., Pl. Enl., n.* 82.
Ramphastos Toco, *Auct.*
Toco, *Le Vaill., Ois. de Par., tom.* iii. *p.* 7. *t.* 2.
Hab. in Guianâ et ad fluvium Platæ.
Descr. Maximus. Cauda subabbreviata. Rostrum maximum, aurantiacum, fasciâ basali maculâque magnâ utrinque ad apicem mandibulæ superioris nigris. Guttur album. Torques pectoralis subevanescens. Orbitæ rubræ.

*** *Caudæ tectricibus superioribus coccineis.*

Ramphastos vitellinus, Ill. *Ramph. rostro nigro, fasciâ propè basin cæruleâ cincto; gutturis flavi marginibus genisque albidis.*
Long. tot. 17—18 unc.; *rostri*, 5; *alæ*, 7; *caudæ*, 6½, *tarsi*, 1¾.
Ramphastos vitellinus, *Auct.—Swains., Zool Ill., pl.* 56.
Pignancoin, *Le Vaill., Ois. de Par., tom.* ii. *pl.* 7.
Hab. in Guianâ, Cayennâ, et ad fluvium Amazonum.
Descr. Guttur in medio aurantiaco-flavum, latera versus multoties pallidius, præsertim ad genas auresque ubi in album evadit. Torques pectoralis latior. Orbitæ cœruleæ. Irides rubræ.

Ramphastos Ariel, Vig. *Ramph. rostro nigro, fasciâ prope basin flavâ, culmine basin versus cæruleo; gutture flavo fasciâ pallidè flavâ a pectoris torque latâ coccineâ sejuncto.*
Long. tot. 18 unc.; *rostri*, 4; *alæ*, 7½; *caudæ*, 6½; *tarsi*, 1¾.
Ramphastos Ariel, *Vig., in Zool. Journ., vol.* ii. *p.* 466.
Ramphastos Tucanus, *Linn.*?
Tucana Brasiliensis gutture luteo, *Briss., Orn., vol.* iv. *p.* 419. *pl.* 32. *f.* 1.
Toucan à gorge jaune de Brésil, *Buff., Pl. Enl., n.* 307.
Toucan de Para, *Vieill., Gal. des Ois., Suppl.*
Ramphastos Temminckii, *Wagl., Syst. Avium.*
Hab. in Brasiliâ.
Descr. Irides cœruleæ. Orbitæ rubræ.

Ramphastos dicolorus, Linn. *Ramph. rostro viridescente, fasciâ basali nigrâ; pectore coccineo.*

Long. tot. 14–17 unc.; *rostri*, 2¼–3¾; *alæ*, 7; *caudæ*, 6½; *tarsi*, 1¼.

Ramphastos dicolorus, *Auct.*

Yellow-throated Toucan, *Lath., Syn., vol.* i. *p.* 325.

Petit Toucan à ventre rouge, *Le Vaill., Hist. Nat. des Toucans, pl.* 8.

Tucai, *Azar., Voy., tom.* iii. *p.* 143.

Ramphastos Tucai, *Licht., Cat., p.* 7.

Ramphastos chlororhynchus, *Temm., Man. d'Orn.*

Hab. in Brasiliâ.

Descr. Guttur flavum in medio subaurantiacum. Pectus totum coccineum. Irides cœruleæ. Orbitæ rubræ.

Obs. In junioribus rostrum brevius, sordidè flavum.

Genus Pteroglossus, *Ill.*

Rostrum magnum.

Nares superæ, in maxillæ basi sitæ.

Cauda gradata.

Suprà viridescentes, uropygio (nisi in perpaucis) discolore; subtùs, capite, collo, rostro, orbitisque nudis utplurimùm discoloribus; pedes cærulei.

Pteroglossus Aracari, Ill. *Pter. gastræo flavo, fasciâ latâ coccineâ; rostro flavescente, culmine maxillâque inferiore nigris.*

Long. tot. 18–19 unc.; *rostri*, 4–5; *alæ*, 6; *caudæ*, 7½; *tarsi*, 1½.

Pteroglossus Aracari, *Ill., et Auct.*

Ramphastos Aracari, *Linn.*

Araçari à ventre rouge, *Le Vaill., Ois. de Par., tom.* ii. *p.* 29. *pl.* 20.

Hab. in Brasiliâ.

Descr. Caput collumque nigra. Uropygium coccineum. Pectus venterque maculis indistinctis sparsis coccineis notati. Orbitæ cœruleæ. Rostrum ad basin lineâ elevatâ flavescente cinctum.

Pteroglossus regalis, Licht. *Pter. gastræo flavo, maculâ pectorali nigrâ, fasciâ anticè nigrâ posticè coccineâ subventrali.*

Long. tot. 15–17 unc.; *rostri*, 4–4½; *alæ*, 6; *caudæ*, 7½; *tarsi*, 1½.

Hab. in Mexico.

Descr. Rostrum flavescens, culmine, maxillæ superioris serraturis, maxillâque inferiore nigris; hâc ad basin lineâ elevatâ flavescente cinctâ. Caput collumque nigra, hoc supernè castaneo infernè coccineo posticè cincto. Pectus, venter, femoraque maculis indistinctis sparsis coccineis notati. Fascia gastræi bicolor pectus inter et ventrem interposita. Uropygium coccineum. Orbitæ cœruleæ.

Pteroglossus castanotis, Gould. *Pter. gastræo flavo, fasciâ latâ coccineâ; auribus castaneis.*

Long. tot. 17½ unc.; *rostri*, 5; *alæ*, 6½; *caudæ*, 7½; *tarsi*, 1¾.

Pteroglossus castanotis, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 119.

Hab. in Brasiliâ.

Descr. *Pteroglosso Aracari* simillimus, nisi rostri capitisque coloribus. Rostrum flavum, culmine, maxillâ inferiore (præter lineam elevatam flavam basalem), maxillâ superiore obliquè dimidiatim, serraturisque nigris. Genæ auresque vel etiam gula nuchaque castaneæ.

Pteroglossus bitorquatus, Vig. *Pter. pectore nuchâque coccineis.*

Long. tot. 14 unc.; *rostri*, 3; *alæ*, 5; *caudæ*, 6; *tarsi*, 1¼.

Pteroglossus bitorquatus, *Vig., in Zool. Journ., vol.* ii. *p.* 481.

Hab. in Guianâ.

Descr. Rostrum flavescenti-albidum, maxillæ inferioris dimidio apicali obliquè nigro. Caput suprà nigrum. Capitis latera gutturque castanea, hoc posticè torque angustâ nigrâ alterâque flavâ cincto. Venter crissumque flavi. Uropygium coccineum. Orbitæ rubræ.

Obs. Fascia flava inter guttur et pectus aliquando deest.

Pteroglossus Azaræ, Wagl. *Pter. pectore coccineo, fasciâ latâ nigrâ.*

Long. tot. 15 unc.

" Araçari Azara, *Le Vaill., Ois. de Par., Suppl., p.* 40. *t. A.*" fide Wagler.

Ramphastos Azaræ, *Vieill., Nouv. Dict. d'Hist. Nat., tom.* xxxiv. *p.* 282.

Pteroglossus Azaræ, *Wagl., Syst. Avium.*

Hab. rarissimus " in Brasiliâ." *Wagl.*

Descr. Rostrum flavum, serraturis nigris. Nucha castanea. Fascia flava inter guttur et pectus nulla. Orbitæ cœruleæ. In cæteris præcedenti simillimus.

Obs. Maxilla superior aliquando obliquè dimidiatim fusco-viridis.

Pteroglossus ulocomus, Gould. *Pter. plumis capitis, genarum, nuchæque foliiferis.*

Long. tot. 18 unc.; *rostri*, 4; *alæ*, 5¾; *caudæ*, 7½; *tarsi*, 2¼.

Pteroglossus ulocomus, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 38.

Hab. prope fluvium Amazonum?

Descr. Verticis plumæ latæ, haud barbatæ, crispæ, nigræ, nitidissimæ; occipitis nuchæque magis angustæ, spatulatæ, itidem nigræ; genarum gulæque magis spatulatæ, flavidè albescentes nigro apiculatæ. Rostrum elongatum, albo serratum, ad apicem aurantiaco-flavum, lineâ elevatâ basin cingente rubrâ; culmine aurantiaco, vittâ utrinque latâ sordidè cœruleâ, lateribus basin versus rubris; maxillâ inferiore, præter apicem aurantiaco-flavum, stramineâ. Jugulum gastræumque flava, pectore parcè ventre confertim coccineo

maculatis, pectoris maculis sublunatis, ventris fascias interruptas simulantibus. Interscapulium uropygiumque coccinea. Orbitæ cœruleæ.

PTEROGLOSSUS HYPOGLAUCUS, Gould. *Pter. subtùs cœruleo-canus, crisso coccineo.*

Long. tot. 18¼ unc.; *rostri*, 4; *alæ*, 6¾; *caudæ*, 7; *tarsi*, 1¼.

Pteroglossus hypoglaucus, *Gould, in Proceedings Zool. Soc., Part.* i. *p.* 70.

Hab. in Columbiâ.

DESCR. Colorum diversitate singularis admodum. Corpus totum subtùs, præter crissum coccineum, cœruleo-canum. Caput caudaque nigræ. Nucha cœruleo-cana. Interscapulium, tergum, et pteromata olivaceo-brunnea. Uropygium flavum. Remiges secundarii virides. Rectrices ad apices brunnei. Mandibularum basis obliquè flava, utrinque maculâ fasciæformi nigrâ notata; superior, nisi ad basin, sanguinea; inferioris dimidium apicale nigrum. Orbitæ cœruleæ.

PTEROGLOSSUS BAILLONI, Wagl. *Pter. subtùs et ad caput croceus.*

Long. tot. 14-16 unc.; *rostri*, 2½–3½; *alæ*, 5½; *caudæ*, 7¼; *tarsi*, 1¼.

Pteroglossus Bailloni, *Wagl., Syst. Avium.*

Araçari Baillon, *Le Vaill., Ois. de Par., tom.* ii. *p.* 44. *t.* 18.

Ramphastos Bailloni, *Vieill., Nouv. Dict. d'Hist. Nat., tom.* xxxiv. p. 283.

Pteroglossus croceus, *Jard. & Selby, Ill. of Orn., vol.* i. *pl.* 6.

Hab. in Brasiliâ.

DESCR. Simplex. Suprà olivaceo-viridis, fronte flavo, uropygio coccineo. Subtùs croceus. Rostrum lutescens, basin versus in olivaceum transiens. Orbitæ rubræ.

PTEROGLOSSUS VIRIDIS, Ill. *Pter. gastræo luteo; rostro supernè flavo, in medio aurantiaco, infernè violaceo-nigro.*

Long. tot. 14 unc.; *rostri*, 3½; *alæ*, 4½; *caudæ*, 5; *tarsi*, 1¼.

Green Toucan, *Lath., Syn., vol.* i. *p.* 331.

Tucana Cayanensis viridis, *Briss., Orn., vol.* iv. *p.* 423. *t.* 33. *f.* 1.

Toucan verd de Cayenne, *Buff., Pl. Enl., n.* 727. (mas.), 728. (fœm.)

Ramphastos viridis, *Linn.*

Hab. in Demerarâ, Guianâ, &c.

DESCR. Suprà olivaceo-viridis, subtùs luteus; uropygio coccineo. Capite colloque in mari atris, in fœminâ castaneis. Rostrum robustum, culmine latè sordidè flavo lineâ longitudinali a lateribus aurantiacis mandibulæ superioris discreto; mandibulâ inferiore violaceo-nigrâ, ad basin roseâ. Orbitæ cœruleæ.

PTEROGLOSSUS INSCRIPTUS, Swains. *Pter. gastræo flavo; rostro flavo, culmine, apice, serraturarum maculis transversis, fasciâque propè basin nigris.*

Long. tot. 12–13 unc.; *rostri*, 2¼; *alæ*, 4; *caudæ*, 5; *tarsi*, 1¼.
Pteroglossus inscriptus, *Swains., Zool. Ill., pl.* 90.
Hab. in Guianâ.
Descr. Præcedenti coloribus simillimus; abdomen magis flavum, rostrumque maximè diversum.

Pteroglossus maculirostris, Licht. *Pter. ventre lutescente, crisso coccineo; mandibulæ superioris lateribus maculis transversis nigris subfasciatis.*
Long. tot. 12 unc.; *rostri*, 2¼; *alæ*, 4¼; *caudæ*, 5; *tarsi*, 1⅜.
Araçari Koulik du Brésil, *Le Vaill., Ois. de Par., vol.* ii. *p.* 45. *t.* 15. " *Suppl. p.* 41. *f. A A* (mas.)." fide Wagler.
Araçari à bec tacheté; Ramphastos maculatus, *Vieill., Gal. des Ois., tom.* ii.
Pteroglossus maculatus, *Jard. and Selby, Ill. of Orn., vol.* i. *pl.* 26.
Hab. in Brasiliâ.
Descr. Uropygium cum stragulo concolor. Fascia lunata inter cervicem et stragulum sulphurea. Caput (præter genas auresque), collum, pectusque in mari aterrima, in fœminâ castanea; genæ in mari aurantiacæ, in fœminâ viridescenti-brunneæ; aures sulphurei, fœminæ magis sordidi. Rostrum pro genere brevius, cinerascens, ad culmen in olivaceum vergens, ad latera maculis irregularibus nigris circiter quatuor notatum. Rectrices sex intermedii rufescenti-brunneo apiculati. Orbitæ cœruleæ.

Pteroglossus Culik, Wagl. *Pter. ventre imo olivaceo, crisso coccineo; rostro nigro basin versus in rubrum transeunte.*
Long. tot. 12–13 unc.; *rostri*, 2¼; *alæ*, 4½; *caudæ*, 4½; *tarsi*, 1¼.
Araçari Koulik de la Guiane, *Le Vaill., Ois. de Par., tom.* ii. *p.* 41. *pl.* 13.
Green Toucan, *Edw., Glean., vol.* iii. *pl.* 330.
Toucan à collier de Cayenne, *Buff., Pl. Enl., n.* 577 (mas.).
Toucan à ventre gris de Cayenne, *Id., Ib., n.* 729 (fœm.).
Ramphastos piperivorus, *Linn.*
Pteroglossus Culik, *Wagl., Syst. Av.*
———— Reinwardtii? *Id., Ib.*
———— Langsdorffii? *Id., Ib.*
Hab. in Cayennâ et Guianâ.
Descr. Præcedenti simillimus mas differt rostro, rectricibus omnibus castaneo apiculatis, genisque cum auribus concoloribus flavis. Fœminæ caput supernè nigrum; collum castaneum; fascia cervicalis nulla; genæ auresque flavæ; jugulum pectusque cœruleocana. Orbitæ, in sexu utroque, cœruleæ.

Pteroglossus prasinus, Licht. *Pter. suprà aureo-viridis, uropygio concolore; subtùs viridis; crisso rectricumque apicibus rufis; genis guldque albescentibus.*
Long. tot. 13 *poll.*; *rostri*, 3.
Hab. in Mexico.

Descr. Rostrum flavum, culminis strigâ, maculâ ante nares, alterâ longitudinali ad tomium, mandibulâque nigris. Rectrices ante apices rufos remigesque in cœruleum vergentes.

Obs. In junioribus maxilla ad basin rufo nebulosa apicem versus in flavum et lutescentem transit. In his venter sordidè viridis.

Pteroglossus sulcatus, Swains. *Pter. viridis, uropygio crissoque concoloribus; guld albescente; genis cæruleis.*

Long. tot. 11–13 *poll.*; *rostri*, 3–3¼; *alæ*, 5; *caudæ*, 4¾; *tarsi*, 1¼.

Pteroglossus sulcatus, *Swains., in Journ. Roy. Instit., vol.* ix. *p.* 267. *Zool. Ill., pl.* 44. *Temm., Pl. Col., pl.* 356.

Hab. in Guianâ.

Descr. Subunicolor. Remiges rectricesque in cœruleum ad apices vergentes. Rostrum pro genere brevius, latum, ad latera et supernè complanatum; maxillæ latera 2-, mandibulæ 1-sulcata: nigrum, culmine apiceque saturatè rufo-brunneis, mandibulæ angulo sanguineo.

The whole of the species characterized above are figured in Mr. Gould's 'Monograph of the Ramphastidæ,' which is just completed; and all of them, with the exception of *Pteroglossus Azaræ*, *Pter. inscriptus*, and *Pter. prasinus*, are contained in the Society's collection, and were exhibited to the Meeting.

July 22, 1834.

William Yarrell, Esq., in the Chair.

A letter was read, addressed to Mr. Vigors by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nepâl Residency, February 14, 1834. It referred to various living animals which it is the intention of the writer to forward to Calcutta for transmission to England during the ensuing season. It also referred to a collection of skins of *Mammalia* and *Birds* which have already been dispatched by Mr. Hodgson for the Society. Among them are skins of the *Chiru Antelope*, *Antilope Hodgsonii*, Abel, male and female; and the writer refers to these as elucidating the points which had been unascertained by him at the time of making to the Society his several previous communications, abstracts of which have been published in the Proceedings of the Committee of Science and Correspondence, Part i. p. 52, and Part ii. p. 14; and in the Proceedings of the Society, Part i. p. 110.

The communications referred to "left only the inguinal pores, the number of teats in the female, and the fact of her being cornute or otherwise, doubtful: those points are now cleared up. The female is hornless, and has two teats only: she has no marks on the face or limbs, and is rather smaller than the male. The male has a large pouch at each groin, as in *Ant. Dorcas*: that of the female is considerably smaller. These escaped me," Mr. Hodgson says, "till I got this season's specimens, remarkable as the pouches are. But the fact is that they are composed of very thin brittle skin, and, as they hang loose by a narrow neck, they are apt to be torn off by the Bhoteahs while preparing the specimens."

Mr. Hodgson again describes in detail the maxillary tumours or accessory nostrils of the *Chiru Antelope*. He regards as analogous to these accessory nostrils, and as essentially the same with them in use, the intermaxillary pouches noticed by Col. Hamilton Smith as partially characteristic of his *Cephalophine* and *Næmorrhædine* subgenera of *Antilope*.

Referring to Col. Hamilton Smith's distribution of the genus *Antilope*, Mr. Hodgson remarks that "the *Chiru Antelope* can only belong either to the *Gazelline* or the *Antilopine* group. Hornless females would place it among the latter; but lyrate horns, ovine nose, and want of sinus, would give it rather to *Gazella*, and its singular inguinal purses further ally it to *Ant. Dorcas* of this group. But from *Gazella* it is distinguished by the accessory nostrils or intermaxillary pouch, the hornless females, the absence of tufts on the knees, and of bands on the flanks. The *Chiru* with his bluff bristly

nose, his intermaxillary pouches, and hollow-cored horns, stands in some respects alone," and hence Mr. Hodgson is disposed to suggest the regarding it as representing "a new subgenus, to be termed *Pantholops*, the vulgar old name for the *Unicorn*." "The habits and manners of the *Chiru*, his medial size, and his elegant vigorous form, ally him most to the *Antilopine* and *Gazelline* groups, and equally to both."

Some extracts were read from a Letter addressed by the President, Lord Stanley, to the Secretary, giving an account of the breeding of several *Birds* in his Lordship's Menagerie at Knowsley. The *red Grosbeak*, *Loxia Cardinalis*, Linn., has a nest of three young which are nearly fledged; and a single young one of the *Towhee Bunting*, *Emberiza erythrophthalma*, Gmel., has been hatched. The *Loxia cucullata* has this year, as last year also, made a nest and laid one egg; and the *American yellow Bird*, *Fringilla tristis*, Linn., is now sitting.

The gosling of the *Sandwich Island Goose*, respecting which a notice from Lord Stanley was read on May 27, (p. 41.) "is now fully as large as the parents, and nearly resembles them in plumage; the only differences being about the neck, which is more indistinct in front and wants the full extension of the black down the nape, and the collar at the bottom just above the breast is only faintly marked. The legs also are as yet of a dirty greenish yellow tinge. It is not pinioned, but has hitherto shown no wish to use its wings. In fact they are the tamest of the tame, scarcely will move out of one's way if in the walks, and are constantly coming into the building, even more familiarly than the *common Ducks*."

A specimen was exhibited of the *Manis Temminckii*, Smuts, forming part of the collection made by Mr. Steedman in Southern Africa. Mr. Bennett stated that his object in calling the attention of the Society to it was to point out the external characteristics of a species known to its original describer by its skeleton alone and by a few detached scales.

It may be thus characterized:

MANIS TEMMINCKII, Smuts. *Man. capite breviore; corpore latiore, squamis magnis, 11-seriatis; caudâ truncum longitudine subæquante, latitudine paullò minore, ad apicem subtruncatum vix angustiore.*

Hab. apud Latakoo?

Long. tot. 25½ unc.; *caudæ*, 12; lat. *dorsi*, 8; *caudæ*, prope apicem, 5.

The most remarkable features of this animal are the shortness of the head; the breadth of the body; and the breadth of the tail, which is nearly equal to that of the body, and continues throughout the greater part of its extent of nearly the same width, tapering

only slightly towards the end where it is rounded, and almost truncate. In the shortness of the head and the general form of its upper part, the *Man. Temminckii* bears nearly the same relation to the *Man. Javanica*, as is borne by the *Weasel-headed Armadillo*, *Dasypus* 9-*cinctus*, Linn., to the *six-banded*, *Das.* 6-*cinctus*, Ej. Of the eleven series of scales on the body, one on each side is ventral rather than dorsal. The scales are very large, longitudinally striate, smooth as though rubbed towards their hinder margin, and slightly produced into a thin, short, and rounded process: they are comparatively few in number, the large scales of the middle line of the back from the *occiput* to the tip of the tail being twenty only in number; in *Man. pentadactyla*, Linn., they are about thirty; and in *Man. Javanica*, Desm., they vary from about forty-five to fifty. A peculiarity in the distribution of the scales of *Man. Temminckii* is the cessation of the middle series of them at a short distance anterior to the extremity of the tail, so that the last four transverse rows consist of four scales each, each of the preceding ones having five.

Some notes by Mr. Rymer Jones of the dissection of an *Agouti*, *Dasyprocta Aguti*, Ill., were read.

The animal was a male; adult; measuring $19\frac{6}{10}$th inches from the extremity of the jaws to the root of the tail; and weighing 4lbs. 4¼oz. Its head measured $4\frac{6}{10}$ inches in length; the tail, $1\frac{9}{10}$.

The *testes* were situated within the *abdomen*, in contact with the abdominal muscles, to which they were connected by a duplicature of *peritoneum*; the *epididymis*, contained in a pouch apparently formed by the *cremaster* muscle, protruded through the internal oblique. The preputial orifice was $1\frac{1}{10}$ inch from the *anus*.

The stomach, 5¼ inches long and 8 inches in its greatest circumference when moderately distended, had a remarkable constriction between its cardiac and pyloric portions which gave it the appearance of consisting of two distinct cavities; the pyloric portion bulged out on each side of the *pylorus* so as to make the *duodenum* commence from a central depression.

The *omentum* was shrivelled up under the stomach, and reached, when unfolded, rather more than half way to the *pubes*: it extended further on the right side than on the left.

The intestines measured in total length 253 inches. The length of the small intestines was 222 inches, and their greatest circumference (at the *duodenum*) $1\frac{4}{10}$; the *cæcum* was 6 inches long, and its greatest circumference $2\frac{8}{10}$; the large intestines measured 25 inches, the greatest circumference being at the commencement of the *colon*, where it was 2 inches, and whence it gradually tapered towards the *rectum* which was only $\frac{6}{10}$ in circumference. There were two glands, each $\frac{9}{10}$ of an inch in length, and placed on each side of the *anus*: they secrete a yellow substance resembling the *cerumen* of the ear and of a fragrant odour.

The liver, weighing 4¼oz., occupied the usual situation, and con-

sisted of five lobes. The anterior or cystic was the largest, and presented inferiorly two deep fissures, one of which (the left) received the suspensory ligament, and the other the gall-bladder. The next in size was the left lobe. To the inferior surface of the right lobe two *lobuli* were appended. The concave surface of the liver was very irregular in its aspect. The gall-bladder was pyriform, 1 inch in length, and deeply buried in a fissure in the concavity of the largest lobe of the liver. The bile entered the intestine $\frac{1}{4}$ inch from the pyloric ring.

The *pancreas*, of an elongated form and running along the dorsal aspect of the stomach across the spine, measured $2\frac{1}{4}$ inches.

The spleen weighed $5\frac{1}{4}$ drachms. It laid close to the spine, above or anterior to the left kidney, and attached to the cardiac extremity of the stomach. Its form was flat ovoid, with a deep *fossa* on its posterior margin lodging the anterior portion of the kidney.

The lungs consisted of four lobes on the right side and of three on the left. They measured $3\frac{1}{4}$ inches in length; the breadth of the right was $1\frac{3}{10}$, of the left, 1. They weighed (much diseased and studded with tubercular masses) 2 oz. 6 drachms.

The heart, of a globular shape, and very muscular, measured $1\frac{1}{4}$ inch in length, $1\frac{1}{10}$ in lateral breadth, and $1\frac{1}{10}$ in its antero-posterior diameter. It was seated more in the left than in the right side of the chest, lying on the cartilages of the second, third, fourth, fifth, sixth, and seventh ribs, and on the corresponding portion of the *sternum*.

The *venæ cavæ* were one superior and one inferior. The *aorta* gave off from the convexity of its arch one large trunk, which, after running half an inch from the main artery, divided into an *arteria innominata*, a left carotid, and a left subclavian.

The *trachea* consisted of twenty-eight rings, each forming nearly a complete circle. The superior *cornu* of the *os hyoides* was composed of three parts. The upper opening of the *larynx* was cup-shaped and patulous, owing to the prolongation of the arytenoid cartilages. The *rima glottidis* was small and triangular. The borders of the *epiglottis* formed two sides of an equilateral triangle.

The mucous membrane of the *pharynx* presented numerous prominent *papillæ*. The tongue was $2\frac{8}{10}$ inches in length, and had numerous very delicate *papillæ*, which were scarcely visible to the naked eye.

The nostrils were contracted and very moveable.

The pupil was oval, its long axis being placed horizontally.

The supra-renal glands, each 1 inch in length, were of an oblong shape and dingy yellow colour. They were situated close to the sides of the bodies of the second and third lumbar *vertebræ* in contact with the anterior extremity of the kidneys.

Of the kidneys the left rested on the transverse processes of the third, fourth, and fifth lumbar *vertebræ*; the right was placed more anteriorly, extending from the posterior margin of the last rib to

the transverse process of the fourth lumbar *vertebra*. They were flattened behind, and each measured in length $1\frac{9}{10}$ inch, in breadth $1\frac{2}{10}$.

At the anterior and external extremity a portion was separated from the rest by a deeply indented line, and resembled a patch stuck on. The weight of the two kidneys was 1oz. 5¼ drachms. The urinary bladder, pyriform, and measuring, when moderately distended, 3¼ inches in length and 1¼ in diameter, was situated chiefly above the brim of the *pelvis*.

The *testes* were barrel-shaped, 1¼ inch long and ½ in diameter. The *epididymis* was of a triangular form, about ¼ inch long and the same in diameter, and attached by the apex of the triangle to the extremity of the *testis*. The *vasa deferentia* terminated at the sides of the *verumontanum*. The *vesiculæ seminales*, 2¼ inches in length, consisted of a middle portion, into which sixteen or eighteen little appendices opened: they terminated at the sides of the *verumontanum*. The prostate glands, four in number, formed of masses of convoluted vessels, the two superior ones evidently differing in texture from the two inferior, terminated in the same situation. Cowper's glands were of the size of kidney beans, internally very spungy, and filled with glairy fluid.

The *penis* was 4 inches in length. Its muscles consisted of two *levatores penis*, arising from the posterior margin of the *os pubis* close to the *symphysis*, sending forwards two tendons running upon the *dorsum penis* to be inserted into the bone covering the dorsal aspect of the *glans:* and two *erectores penis*, arising from the whole length of the posterior margin of the *os pubis*, and embracing the external aspect of the *crus penis* on each side, into the sheath of which they were inserted. The *ejaculatores seminis* were very massive; and the *urethra* very muscular. The *glans penis* was 1¼ inch in length, and bifid at the extremity, which contained a spacious orifice, at the bottom of which were seen two smaller apertures: the anterior of these was the opening of the *urethra;* the posterior led to a rugous canal about ¼ inch in length, at the bottom of which were placed two osseous spurs, which, by a muscular apparatus, may be protruded from the extremity of the *penis*. Externally the *glans* was studded with very fine bristles, both upon its upper and lower surface, which were arranged for the most part in longitudinal lines pointing backwards. From the lateral aspects of the middle half of the *glans* projected two horny plates, serrated at their external margin, all the minute teeth pointing backwards.

The morbid appearances observed were tubercles in the lungs, liver, and kidneys.

August 12, 1834.

N. A. Vigors, Esq., M.P., in the Chair.

A Letter was read, addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z. S., and dated Nepâl, February 28, 1834. It related chiefly to the distinguishing characteristics between the *Ghŏrăl* and the *Thâr Antelopes*.

Mr. Hodgson remarks that *Antilope Goral*, Hardw., and *Ant. Duvaucellii*, Ham. Smith, agree with each other in manners, form, and characters; as do also *Ant. Sumatrensis*, Shaw, and *Ant. Thar*, Hodgs. But the two former appear to him to differ very considerably in characters, as they certainly do in structure and in manners, from the two latter. He is, nevertheless, disposed to leave the whole of them for the present in one group, for which it will, however, be necessary to propose amended characters. The double thick coat of *Antt. Goral* and *Duvaucellii*, he is aware, may be referred to their cold habitat, and he suggests that possibly even their want of suborbital sinus may be attributable to the same cause.

Observing first that the solidity of the core of the horns must cease to form part of the generic character of *Antilope*, he proceeds to offer the following characters for the

Subgenus Nemorhedus, *Smith*.

Structure assuming a Caprine form, suited for heavy climbing or for leaping. Horns in both sexes; their cores hollow and connected with the frontal sinuses, but not porous and only subcellular; inserted behind the orbits, short, conical, simply bent back, annulo-wrinkled, parallel to the plane of the face, and nearly so to each other, subremote at the base. Suborbital sinus small or wanting. No inguinal pores. Tail Caprine. Ears longish, pointed, and striated. Muzzle small. Maned. Hair of two sorts and thick, or of one sort and spare. Four teats in the females.

Reside in the mountainous and woody regions of the continent and islands of India, solitarily or in small groups.

1. *Ant. Sumatrensis*, Shaw. *Cambing Ootan.*
2. *Ant. Duvaucellii*, Ham. Smith. Variety of *Ant. Goral*?
3. *Ant. Goral*, Hardw. Characters extremely Caprine, being allied to *Antilope* only by its round and ringed horns. Size small. Attitude gathered, with the back much arched, and structure adapted for leaping. Limbs moderately stout and rigid. General form of the scull Caprine, with the ridge-line much bent, and the *parietes* depressed at a strong angle to the frontal bones, and no indentation

before the orbits. Fifty inches long, exclusive of the tail, and twenty-seven high. Horns seated on the crest of the frontals, six inches long, parallel to each other, and the points inclined inwards; 20 to 30 *annuli* extending two thirds up the horns, crowded and vague, especially towards the base, somewhat interrupted by faint longitudinal *striæ*, pearled, truncated, independent of each other, and equally developed all round. No suborbital sinuses. A half muzzle. Upper lip clad. Tail conico-depressed and half nude only below. Fur of two sorts, abundant and loosely applied to the skin. A short semi-erect mane on the *vertex*. Knees usually callous and nude, but not congenitally so.

Colours rusty and brown, paler below. Line of the *vertex*, tail, chest, and a stripe down the front of the fore legs and back of the hind brown-black. Outsides of the ears rusty. Lips and chin rufescent white. A large patch of pure white at the junction of the head and neck below. Horns, hoofs, and muzzle black. *Iris* dark hazel. Eye mean.

Female: rather smaller and paler hued.

Young: redder and destitute of marks, or mane.

Inhabits the juxta-Himâlayan region of Nepâl.

4. *Ant. Thar*, Hodgs. The *Thâr* of the Nepâlese. Characters less decidedly Caprine than in the last. Very nearly allied to the *Cambing Ootan*. Back straight. Withers higher than the croup, and structure suited for heavy climbing, not for leaping. Limbs very stout and rigid, with higher hoofs, the edges of which are raised above the pads. General form of the scull Cervine, with the ridge-line moderately convexed, and the *parietes* not depressed at a strong angle to the frontal bones. A deep indentation before the orbits. Horns posterior to the orbits but below the crest of the frontals, eight inches long, rather stouter and less falcated than in the preceding, subdivergent with the points inclined outwards; with 20 to 30 crowded *annuli* extending two thirds up the horns, the *annuli* truncated, pearled, equal all round, independent, broken by decided longitudinal *striæ*. One inch below the eye a suborbital sinus opening on a nude space by a round puncture, and furnished with a fleshy thick gland secreting a viscous humour, as in *Ant. Sumatrensis*. A half muzzle larger than in the preceding, and spreading a little over the upper lip. Tail shorter, depressed, nude below. Fur of one sort only, and scanty, harsh, and applied to the skin. A semi-erect mane, as in the *Ghoral*. Knees callous, perhaps congenitally so: *sternum* not so. Size large. Sixty-four inches long by thirty-eight high, and upwards of 200 lbs. in weight.

Colour of the whole animal above, with the entire head and neck, jet black; on the flanks mixed with deep clay red. The limbs and hams outside, as far down as the great flexures, clay red, nearly or wholly unmixed; the rest of the limbs hoary or rufescent hoary. Outsides of ears dark. Chest pale. No stripes down the legs. Lips and chin dull hoary, and a stripe of pure hoary running backwards over

the jaws from the gape. Horns, hoofs, and muzzle black. *Iris* dark hazel. Eye mean.

Female: as large as the male and like him in all material respects.

Young: paler and mixed with grey.

Inhabits the precipitous and wooded mountains of the central region of Nepâl, up and down which it rushes with fearful rapidity, though it does not spring or leap well; nor is it speedy.

The exhibition was resumed of the new species of *Shells* contained in the collection formed by Mr. Cuming on the Western Coast of South America, and among the Islands of the South Pacific Ocean. Those exhibited on the present evening consisted of various species of *Anatinidæ* and of the *Myidous* genus *Saxicava*: they were accompanied by characters by Mr. G. B. Sowerby.

Genus Periploma, *Schum.*

Periploma lenticularis. *Per. testâ ellipticâ, lenticulari, æquivalvi, albâ, impolitâ, tenui; epidermide tenuissimâ; margine dorsali anticâ sinuatâ, cum margine anticâ angulum supernè efformante: long.* 0·7, *lat.* 0·3, *alt.* 0·55 *poll.*

Hab. ad Insulam Muerte dictam.

The inside of this species shines with a silvery lustre, but is not iridescent.

It was found in sandy mud at a depth of eleven fathoms.—G. B. S.

Periploma planiuscula. *Per. testâ oblongâ, planiusculâ, inæquivalvi, albicante, impolitâ, tenuiusculâ; latere antico brevi, subrugoso; marginibus, anticâ subdeclivi subtruncatâ, dorsali rectiusculâ; epidermide tenui, pallescente: long.* 2·4, *lat.* 0·8, *alt.* 1·8 *poll.*

Hab. ad Sanctam Elenam.

Odd valves alone were found on the sands.

This species bears some resemblance to Professor Schumacher's *Per. inæquivalvis*; it differs, however, in shape from that species, and both the valves are deeper.—G. B. S.

Genus Anatina.

Anatina prismatica. *An. testâ oblongâ, subtrapeziformi, crassiusculâ, opacâ, laminâ internâ prismaticâ; latere antico truncato, hiatu maximo; lamellâ utriusque valvæ internâ subumbonali, ex tuberculo ligamentifero decurrente, ramoque ligamenti cornei ferè parallelo, anticè inclinato: long.* 2·7, *lat.* 1·3, *alt.* 1·8 *poll.*

Hab. ad littora Oceani Polaris Meridionalis. (New South Shetland.)

Driven on shore after a gale.—G. B. S.

Anatina costata. *An. testâ oblongâ, albâ, posticè rostratâ, anticè rotundatâ; costis octo radiantibus, anticis gradatim mino-*

ribus; rostro lævi; margine ventrali crenatâ: long. 0·3, *lat.* 0·15, *alt.* 0·2 *poll.*

Hab. ad Sanctam Elenam.

A single specimen was found in sandy mud at a depth of six fathoms.

In form it resembles *An. longirostrata.*—G. B. S.

Genus Lyonsia.

Lyoneia picta. *Ly. testâ obovatâ, tenui, posticè latiore; epidermide fuscâ, lineis nigris undulatis pictâ; marginibus, anticâ dorsali declivi, posticâ dorsali rectiusculâ; anticâ ventrali hiante, hiatu parvo, posticâ et posticâ ventrali rotundatis: long.* 0·85, *lat.* 0·4, *alt.* 0·65 *poll.*

Hab. ad Insulam Muerte dictam.

Found attached to particles of sand in eleven fathoms' water.

As it increases in size it becomes rather irregular in its form.—G. B. S.

Lyonsia brevifrons. *Ly. testâ oblongâ, pallescente; epidermide obscurâ, corneâ; latere antico brevi, acuminato, postico longiore, attenuato; marginibus, dorsali posticâ elongatâ rectiusculâ, dorsali anticâ brevi declivi, anticâ ventrali hiante, hiatu declivi, elongato, magno: long.* 0·8, *lat.* 0·3, *alt.* 0·4 *poll.*

Hab. ad Sanctam Elenam.

Found in sandy mud at from six to eight fathoms' depth, attached to particles of sand.—G. B. S.

Genus Saxicava.

Saxicava tenuis. *Sax. testâ oblongâ, tenui, albâ; epidermide pallescente; latere antico brevi, subtruncato: long.* 0·8, *lat.* 0·25, *alt.* 0·4 *poll.*

Hab. ad Pacosmayo et ad Lambeyeque.

Found in coral rock at twenty-five fathoms' depth.—G. B. S.

Saxicava purpurascens. *Sax. testâ oblongâ, solidiusculâ, anticè brevissimâ, posticè truncatâ; epidermide tenuissimâ, posticè purpurascente: long.* 1·1, *lat.* 0·4, *alt.* 0·4 *poll.*

Hab. ad Insulam Muerte dictam.

A single specimen was found in sandy mud at a depth of eleven fathoms.—G. B. S.

Saxicava solida. *Sax. testâ oblongâ, solidâ, rugosâ, subirregulari, albicante; epidermide corneâ; latere antico brevissimo, postico elongato truncato, costis divergentibus duabus conspicuis: long.* 1·4, *lat.* 0·6, *alt.* 0·8 *poll.*

Hab. ad Sanctam Elenam.

Found in clefts of rock brought up from a depth of eighteen fathoms.

The specimens from which the above characters have been taken appear to give the most perfectly regular form of the species. There are other varieties from Payta and the Isle of Muerte.—G. B. S.

A collection of *land* and *fresh-water Shells*, formed in the Gangetic Provinces of India by W. H. Benson, Esq., of the Bengal Civil Service, and presented by that gentleman to the Society, was exhibited. It comprised forty species, and was accompanied by a descriptive list prepared by the donor, and also by detailed notices of some of the more interesting among them. These notices were read: they are intended by Mr. Benson for publication in the forthcoming No. of the 'Zoological Journal.'

From the time that he first became acquainted with the animal of a *Shell* resembling in all respects, except in its superior size, the European *Helix lucida*, Drap., Mr. Benson regarded it as the type of a new genus of *Helicidæ* intermediate between *Stenopus*, Guild., and *Helicolimax*, Fér. He had prepared a paper on this genus, for which he intended to propose the name of *Tanychlamys*; he finds, however, that Mr. Gray has recently described (page 58) the same genus under the name of *Nanina*. The generic characters observed by Mr. Benson are as follows:

NANINA, *Gray*.

Testa heliciformis, umbilicata; peritremate acuto, non reflexo.

Animal cito repens. Corpus reticulosum, elongatum. Pallium amplum, foramine communi magno perforatum, peritrema amplexans; processubus duobus transversè rugosis (quasi articulatis) omni latere mobilibus instructum, unico prope testæ aperturæ angulum superiorem exoriente, altero apud peripheriam testæ. Os anticum inter tentacula inferiora hians; labia radiato-plicata. Tentacula superiora elongata, punctum percipiens tumore oblongo situm gerentia. Penis prægrandis; antrum cervicis elongatum latere dextro et prope tentacula situm. Solea complanata pedis latera æquans. Cauda tentaculata; tentaculum subretractile, glandulâ ad basin positâ humorem viscidum (animale attrectato) exsudante.

Mr. Benson describes particularly the habits of the species observed by him, which he first discovered living at Banda in Bundelkund on the prone surface of a rock. The animal carries the shell horizontally or nearly so; is quick in its motions; and, like *Helicolimax*, it crawls the faster when disturbed, instead of retracting its *tentacula* like the *Snails* in general. In damp weather it is rarely retracted within its shell, the foot being so much swelled by the absorption of moisture that if it is suddenly thrown into boiling water the attempt to withdraw into the shell invariably causes a fracture of the aperture. In dry weather the foot is retracted, and the aperture is then covered by a whitish false *operculum* similar to that of other *Helicidæ*. The two elongated processes of the mantle are con-

tinually in motion, and exude a liquor which lubricates the shell, supplying, apparently, that fine gloss which is observable in all recent specimens. The fluid poured out from the orifice at the base of the caudal horn-like appendage is of a greenish colour; it exudes when the animal is irritated, and at such times the caudal appendage is directed towards the exciting object in such a manner as to give to the animal a threatening aspect.

Of several specimens brought to England by Mr. Benson in 1832, one survived from December 1831, when it was captured in India, until the summer of 1833.

Another *Shell* particularly noticed by Mr. Benson is the type of a new genus, allied to *Cyclostoma*, which he has described under the name of *Pterocyclos* in the first No. of the 'Journal of the Asiatic Society of Calcutta.' Mr. Benson has ascertained, by the inspection of specimens in the collection of Mr. G. B. Sowerby, that the *Cycl. bilabiatum* of the latter is the same shell at a more advanced period of growth; when, in addition to the notch and overhanging wing at the upper part of the aperture, the peristome becomes thickened and sinuated. The *Cycl. Petiverianum*, Gray, exhibits an approach to *Pterocyclos* in the crude formation of a wing at the upper part of the right lip.

A species of *Assiminia*, Leach, obtained at Barrackpore, has the shell ovate-conical, narrowly umbilicated, varying infinitely in colour, and generally banded with red, white, and glaucous; the aperture is entire, oblong-oval, angular at the upper part. The head has only two short, thick, subcylindrical *tentacula*, with the percipient points placed at their summits. The snout is like that of *Paludina*, transversely corrugated, and bilobed or rather emarginate at the middle of the extremity; the lobes rounded. The mantle is free; the branchial cavity open. The foot has a spiral horny *operculum*, angular at the upper end.

Specimens of this *Assiminia* were preserved alive in a glass, replenished occasionally with fresh or salt water, until after the vessel in which Mr. Benson returned to England had passed St. Helena.

A *Snail* obtained near Sicrigali and the river Jellinghy, one of the mouths of the Ganges, is thus characterized by Mr. Benson:-

HELIX INTERRUPTA. *Hel. testâ sinistrorsâ; orbiculato-convexâ, infrà tumidâ, umbilicatâ, ad peripheriam obtusè angulatâ, longitudinaliter confertissimè striatâ, suprà striis interruptis, fasciis transversalibus dispositis; spirâ apice obtusâ; peritremate tenui, acuto.*

Animal. *Tentacula duo superiora elongata capitulis tumidis puncta percipientia gerentibus, duo inferiora capitulis parvis tumidis. Pes elongatus, compressus, marginatus, suprà granulatus, aperturâ terminali anum et membrum carnosum mucorem emittens continente.*

In this latter character, that of the excrement being voided from

an opening in the terminal and posterior part of the foot instead of from the *foramen commune*, the animal of *Hel. interrupta* differs most materially from the other *Helices*. The angulated periphery of the shell shows an approach to *Carocolla*, but Mr. Benson is not aware that the animal of this genus differs from that of *Helix*. From *Hel. Himalayana*, Lea, the *Hel. interrupta* is distinguished by its peculiar sculpture; its spire is also more exserted.

The collection also contained specimens of an *Arcaceous Shell* found in the bed of the Jumna at Humeerpore in Bundelkund. Its form, its lozenge-shaped ligamental scar, and the position and order of the teeth are those of the *Arcaceæ* generally; while the oblique production of the teeth on the posterior side down the inner surface of the cardinal *lamina*; the separation of the teeth into two sets by the interposition of an edentate portion of the cardinal *lamina*; and the freedom of the shell from ribs, with the exception of the ridges which occur at its angles; distinguish it from the marine *Arcaceæ*. Mr. Benson proposes for the fluviatile form the generic appellation *Scaphula*.

Referring to specimens contained in the collection of a new form of *Solenaceous Shell*, described by him in the 'Journal of the Asiatic Society of Calcutta,' under the name of *Novaculina*, Mr. Benson describes also a second species of the genus which he has recently obtained from South America, and points out the characters which distinguish it from *Nov. Gangetica*.

The following Note by Mr. Benson relative to the importation of the living *Cerithium Telescopium*, Brug., adverted to at the Meeting on March 25, 1834, (page 22,) was read.

"The possibility of importing from other countries, and especially from the warmer latitudes, the animals which construct the innumerable testaceous productions that adorn our cabinets and museums, the accurate knowledge of which is so necessary to enable the conchologist rightly to arrange this beautiful department of nature, must be an interesting subject to every naturalist, and will render no apology necessary for the following notices extracted from my journal. Their publicity may incite others who may have opportunities of trying the experiment to follow the example.

"January 1832. Observed near the banks of the canal leading from the eastern suburb of Calcutta to the Salt Lake at Balliaghát, heaps of a *Cardita* with longitudinal ribs, of a large and thick *Cyrena*, and of *Cerithium Telescopium*, exposed to the heat of the sun for the purpose of effecting the death and decay of the included animals previously to the reduction of the shells into lime.

"Early in the month I took specimens of them, and leaving them for a night in fresh water I was surprised to find two *Cerithia* alive. I kept them during a fortnight in fresh water, and on the 22nd January carried them, packed up in cotton, on board a vessel bound for England. After we had been several days at sea I placed them

in a large open glass with salt water, in which they appeared unusually lively. I kept them thus, changing the water at intervals, until the 29th May, when we reached the English Channel. I then packed them up, as before, in a box, and carried them from Portsmouth to Cornwall, and thence to Dublin, which I did not reach until the 14th June; here they again got fresh supplies of sea water at intervals. One of them died during a temporary absence between the 30th June and 7th July; and on the 11th July the survivor was again committed to its prison, and was taken to Cornwall and thence to London, where it was delivered alive to Mr. G. B. Sowerby on the 23rd July.

"This animal had thus travelled, during a period of six months, over a vast extent of the surface of the globe, and had for a considerable portion of that time been unavoidably deprived of its native element."—W. H. B.

At the request of the Chairman, Mr. Heming exhibited a *Swift, Cypselus Apus*, Ill., preserved in spirit, and showing a considerable dilatation at the base of the lower jaw and upper part of the throat. White has observed that "*Swifts*, when wantonly and cruelly shot while they have young, discover a lump of insects in their mouths, which they pouch and hold under their tongue;" but from this notice it would scarcely have been anticipated that so large a collection was made as was found in the present instance. The dilatation had a rounded appearance; distended the skin so as to show distinctly and widely separated the insertion of each of the small feathers at this part; and measured in length 11 lines, and in depth 6. On opening the pouch it proved to be simple, and unconnected except with the cavity of the mouth.

Mr. Heming also exhibited a drawing taken from the recent bird.

Dr. Marshall Hall showed some experiments in the decapitated *Turtle*. Irritation of the nostrils, *larynx*, and spinal marrow induced acts of inspiration; that of the fins and tail induced movements of the other parts respectively.

But the principal object of Dr. Hall was to show that irritation of the nerves themselves equally induced movements of the limbs, &c. When either the sentient or the motory branch of the lateral spinal nerves was stimulated, motions were induced in all the limbs. Dr. Hall stated that a movement of inspiration and of deglutition was caused in the *Donkey* by irritation of the eighth pair of nerves. It has been already stated that irritation of the nostrils, or the branches of the fifth pair of nerves, induced inspiratory acts in the *Turtle*. From these and other facts, Dr. Hall is induced to consider the functions of these two nerves as similar. He further observed that both are nerves of secretion, and that both are muscular nerves —if the minor portion of the fifth be included—as well as exciters of respiration; the fifth differs chiefly in being sentient, being dis-

tributed to external as well as internal surfaces. With the fifth and eighth, Dr. Hall associates other spinal nerves. He considers respiration as a part of a general function of the nervous system, which presides over the *larynx*, *pharynx*, sphincters, ejaculators, &c., to which he has given the name of reflex, from its consisting of impressions carried to and from the *medulla oblongata* and *medulla spinalis*. Some illustrations of this function were given by Dr. Hall at the Meeting of the Committee of Science and Correspondence on November 27, 1832, (Proceedings, Part ii. p. 190,) and further illustrations of it have formed the subject of a Paper by him, which has since been published in the 'Philosophical Transactions'. The experiments shown on the present occasion demonstrate the existence of a series of physiological facts at variance with the law laid down by M. Müller in his Paper entitled "Nouvelles Expériences sur l'effet que produit l'Irritation mécanique et galvanique sur les racines des nerfs spinaux; par Jean Müller, Professeur à l'Université de Bonn," and published in the 'Annales des Sciences Naturelles,' tom. xxiii. (1831), p. 95, viz. "Il suit encore qu'il y a des nerfs qui n'ont point de force *motrice* ou *tonique*, qui ne peuvent jamais occasionner des mouvemens par eux-mêmes, qu'ils soient irrités par l'action galvanique ou mécanique, et qui ne conduisent le courant galvanique que passivement, comme toutes les parties molles humides; qu'il y a en revanche des *nerfs moteurs* ou *toniques* (*nervi motorii seu tonici*) qui montrent à chaque irritation médiate ou immédiate leur force tonique, *qui agit toujours dans la direction des branches des nerfs et qui n'agit jamais en arrière*." In Dr. Hall's experiments the influence first pursued a backward course to the spinal marrow, being afterwards reflected upon the muscles.

Dr. Hall next observed, in regard to respiration, that, whilst Sir Charles Bell is contending that it is involuntary, and Mr. Mayo that it is voluntary, the old doctrine of its being mixed, or partaking of both properties, is the true one. He founded this view upon the following facts:

1. If the *cerebrum* be removed, respiration continues as an involuntary function through the agency of the eighth pair of nerves;

2. If the eighth pair be divided, respiration equally continues, but as an act of volition; but

3. If the *cerebrum* be first removed, and the eighth pair be then divided, respiration ceases on the instant. Volition is first removed with the *cerebrum*; the influence of the eighth pair is then removed by its division. The two sources of the mixed or double function being both cut off, the function ceases.

Dr. Hall explains and reconciles in this manner the difficult and apparently contradictory facts,—that the *medulla oblongata* alone, above the origin of the eighth pair of nerves, or the eighth pair of nerves themselves, may be divided, without arresting the respiration; but that the *medulla oblongata* cannot be divided at the origin of these nerves without arresting the respiration instantly. In the

first case the agency of volition is alone removed, and the respiration continues through the influence of the eighth pair; in the second, that of the eighth pair is removed, and the respiration continues as a function of volition; but in the third, both influences are destroyed at once, and with them the mixed or double function.

The same mixed or double character belongs to the other parts of the reflex function, as that of the *larynx*, the sphincters, the ejaculators. All the organs of the reflex function are also alike impressed through the medium of the mental affections or passions.

The course of the influence which constitutes the reflex function must be divided into the incident, or that into the *medulla*, and the reflected, or that from the *medulla*. The nerves which conduct the incident impression have, hitherto, received no designation; the others constitute a part of the system of muscular nerves. To the former class belong nerves which doubtless supply the *larynx* with its impressibility by carbonic acid, &c., &c., and hitherto undescribed, untraced; to the latter, the superior and inferior laryngeals: to the former belong the fifth, in the nostrils, in the face,—the eighth in the lungs, &c.; to the latter the respiratory nerves: to the former, nerves hitherto undescribed of the sphincters, ejaculators, &c.; to the latter, the muscular nerves supplying these parts.

The whole constitutes the subject of an investigation in which Dr. Hall has been for some time engaged.

August 26, 1834.

William Yarrell, Esq., in the Chair.

An extensive series was exhibited of skins of *Mammalia*, collected in Nepâl by B. H. Hodgson, Esq., Corr. Memb. Z. S., and presented by that gentleman to the Society. It included twenty-two species, several of which were first made known to science by the exertions of Mr. Hodgson, while others still remain to be described by him.

A paper "On the *Mammalia* of Nepâl," written by Mr. Hodgson, has been read before the Asiatic Society of Calcutta, and has been published in the 'Journal' of that Society: but Mr. Hodgson has availed himself of the opportunities which have occurred to him since it was written, to make various additions and corrections in the copy transmitted by him to the Society, portions of which have been read at several previous meetings.

Mr. Hodgson's paper commences by an account of the physical characters of Nepâl, which are so varied, according to the elevation of the several districts, as to render it necessary, when treating on its natural productions, to divide it into three regions. The lower region consists of the Tarâi or marshes, the Bhawar or forest, and the lower hills, and has the climate of the plains of Hindoostan, with some increase of heat and great excess of moisture. The central region includes a clusterous succession of mountains, varying in elevation from 3000 to 10,000 feet, and having a temperature of from 10° to 20° lower than that of the plains. The juxta-Himalayan region, or Kachâr, consists of high mountains, the summits of which are buried for half the year in snow: the climate has nothing tropical about it, except the succession of the seasons.

Mr. Hodgson then enumerates the *Mammalia* which have been observed in Nepâl, adopting in their arrangement the system of Cuvier, and noticing as regards each the region in which it occurs. He adds occasional remarks as to their habits; and notices many which appear to him to be undescribed.

The following is an abstract of this portion of his communication:

QUADRUMANA

are limited to the southern region, where Mr. Hodgson is aware of the existence of

Semnopithecus Entellus, F. Cuv., which has been introduced by religion into the central region, where it flourishes, half domesticated, in the neighbourhood of temples.

Macacus radiatus, Geoff.

He regards it as probable that among the lower hills occurs *Nycticebus Bengalensis*, Geoff.

CHEIROPTERA.

Pteropus, Briss.

Molossus, Geoff.

Rhinolophus, Geoff.

Vespertilio, Geoff.

Species of these genera are abundant in the Tarâi; but there are few in the central region, and fewer still in the northern. One species of *Rhinolophus* and three of *Vespertilio* harbour in outhouses in the central region; and one species of *Pteropus*, of a smaller size and duller colour than the *Pter. medius*, Temm., of the plains, appears in troops in the autumn to plunder the gardens of the ripe pears.

PLANTIGRADA.

Talpa, Linn. This genus is found only in the Kachâr.

Sorex Indicus, Geoff. A dull slaty blue variety of this species is found only in the lower and central regions.

Prochilus labiatus, Ill.,

Helarctos Malayanus, Horsf.,

are found in the Tarâi.

Ursus isabellinus, Horsf.,

Ursus Thibetanus, F. Cuv.,

occur in the central and northern regions.

Gulo orientalis, Horsf. Lower region.

Ratelus mellivorus, Storr. In the lower region and also in the proximate part of the central tract.

Ailurus fulgens, F. Cuv.,

Ictides albifrons, Val.,

belong to the Kachâr, though they occasionally occur in the central region.

Paradoxurus, F. Cuv. Of this genus an undescribed species, coloured, especially in youth, like *Mustela flavigula*, Bodd., is found in the central region. A second species, perhaps the *Par. Bondar*, Gray, occurs in the Tarâi.

DIGITIGRADA.

Viverra undulata, Gray, ? Common in the central region.

Viverra Rasse, Horsf.,

Viverra Indica, Geoff.,

are common in the Tarâi.

Herpestes griseus, F. Cuv., occurs in the lower region; and a second species, apparently undescribed, of a somewhat smaller size and darker duller grey colour, is found in the central region.

Felis Tigris, Linn.,

Felis Pardus, Linn.,
Felis Leopardus, Linn.,
Felis jubata, Linn.,
are all found in the lower region.

The *Leopard* extends into the central region, where it abounds, but is much less dreaded than the *Bear*.

The *Leopard* is found moreover in the northern region; and the *Tiger* also occurs there, close to the snows, but scarcely in the central region.

Felis Nepalensis, Vig. and Horsf.,
Felis Moormensis, Hodgs.,
belong to the central region; as does also an undescribed and beautifully marked species.

Felis viverrinus, Benn., is confined to the Tarâi.

Other small species of *Felis*, not yet determined, are found in the northern region.

Mustela flavigula, Bodd., and two allied and hitherto undescribed species, occur in the central region. A fourth *Martin*, with a shorter tail than the above and more resembling the *common Weasel* of England, is found in the Kachâr. It is the

Martes laniger, Hodgs. Its fur is thick, spirally twisted, woolly, and of a uniform dirty cream colour.

Mustela putorius, Linn.? is an inhabitant of the central, and more abundantly of the northern, region.

Lutra, Linn. Of this genus Mr. Hodgson conceives that no less than seven species are found in Nepâl, five of which differ from the two which inhabit the plains of Hindoostan. Four of these he regards as new, differing materially in length, in bulk and proportions, and in colour; one of them is yellowish white all over; the rest are brown, more or less dark, some having the chin and throat or under surface paled nearly to white or yellow.

Canis familiaris, Linn. The *Pariah* is the only *Dog* of the lower and central regions. The *Thibetan Mastiff* is limited to the Kachâr, into which it was introduced from its native country, but in which it degenerates rapidly; there are several varieties of it.

Canis primævus. Hodgs.

Canis aureus Indicus. In the lower and central regions; rare in the Kachâr.

Canis Bengalensis, Shaw., the small Indian insectivorous *Fox*, occurs in the Tarâi.

Canis n. s.? a large *Fox*, peculiar to the Kachâr.

Canis Lupus, Linn. In the lower region.

Rodentia.

Hystrix leucurus, Sykes. In the central and lower regions.

Lepus nigricollis, F. Cuv.? In the Tarâi.

Lepus n. s. A species as large as the *ordinary Hare* and nearly resembling it occurs rarely in the central and northern regions.

Sciurus Palmarum, Linn. Abundant in the southern region.

Sciurus n. s. ?, of an earthy brown colour tipped with golden yellow, occurs in the central region.

Sciuropterus nitidus, F. Cuv. In the lower and central regions, but rarely in the latter.

Mus decumanus, Linn.,

Mus Rattus, Linn. Both very numerous and troublesome.

Mus Musculus, Linn. Very uncommon.

Field *Mice* are frequently met with.

EDENTATA.

Manis n. s., allied to *Man. Javanica*, Desm. Of frequent occurrence in the hills of the lower region and in the mountains of the central tract.

PACHYDERMATA.

Elephas Indicus, Cuv.,

Rhinoceros unicornis, Cuv., are both abundant in the forest and hills of the lower region, whence in the rainy season they issue into the cultivated parts of the Tarâi to feed upon the rice crops.

Mr. Hodgson suggests that there are two varieties, or perhaps rather species, of the *Indian Elephant*, the Ceylonese and that of the Saul forest. The Ceylonese has a smaller lighter head, which is carried more elevated; it has also higher fore-quarters. The *Elephant* of the Saul forest has sometimes five nails on its hinder feet.

The *Rhinoceros* goes with young from seventeen to eighteen months and produces one at a birth. At birth it measures 3 feet 4 inches in length, and 2 feet in height. An individual born at Katmandoo eight years since measures now 9 feet 3 inches in length; 4 feet 10 inches in height at the shoulders; the utmost girth of his body is 10 feet 5 inches; the length of the head, 2 feet 4 inches; of the horn, 5 inches: he is evidently far from being adult. It is believed that the animal lives for one hundred years; one, taken mature, was kept at Katmandoo for thirty-five years without exhibiting any symptoms of approaching decline. The young continues to suck for nearly two years. It has when born and for a month afterwards a pink suffusion over the dark colour proper to the mature hide.

Sus. scrofa, Linn., var.

RUMINANTIA.

Cervus Axis, Erxl.

Cervus porcinus, Zimm.

Cervus n. s. ?, a brown porcine *Axis*.

Cervus Elaphus, Linn., ?

Cervus Aristotelis, Cuv.

Cervus equinus, Cuv.

Cervus n. s., of a black colour and belonging to the same group as the two last named.

Cervus Bahrainja, n. s., serving, with *Cerv. Wallichii*, Cuv., to connect the *Elephine* and *Rusan* groups of the genus.

Cervus Ratwa, Hodgs.

All these *Deer*, except the last, which belongs to the *Muntjaks*, inhabit the lower hills. The *Ratwa* is proper to the central region and occasionally occurs in the lowest valleys of the Kachâr.

Antilope Goral, Hardw. Northern and central regions.

Antilope Thar, Hodgs. Central region, and occasionally in the northern and southern.

Antilope Chickara, Hardw.,

Antilope Cervicapra, Pall.,

both belong exclusively to the lower region.

Mr. Hodgson is of opinion that the distinctions attempted to be established as between two *Chickaras* on account of some differences in the drawings and specimens of General Hardwicke and Duvaucel cannot be maintained.

Capra Jharal, Hodgs. In the northern region exclusively.

Ovis Ammon, var.

Ovis Musmon, var. Also in the northern region.

Mr. Hodgson states that the wool of the *Huniah* or Bhotean domesticated *Sheep* is superb; and suggests that attempts should be made to naturalize the race in England. To such attempts he is willing to render every assistance in his power. It is suited only for the northern region of Nepâl, suffering much from the heat of the central district.

Bos Taurus, var. *Indicus*.

Bos grunniens, Linn. Domesticated in the Kachâr.

Bos Bubalus, Briss.

Specimens were exhibited of several *Reptiles*, which were accompanied by notes by Mr. Gray. These notes were read.

Mr. Gray regards the *Testudo Spengleri*, Walb., as the type of a new genus of *Emydidæ*, having, like the *fresh-water Tortoises* generally, the toes lengthened and covered by a series of shields, but these members, instead of being webbed as in the other genera of the family, are quite free from each other; the legs, moreover, are destitute of fringe along their outer edge. This structure of the feet and limbs indicates habits less aquatic than those of the *Emydidæ* generally; and Mr. Gray states that such appears to be the case with the *Em. Spengleri*, for though he has watched for a considerable time the specimen now living at the Society's Gardens he has never observed it to enter the water.

From the beautiful figure of the animal of *Em. spinosa* given by Mr. Bell in his 'Monograph of the *Testudinata*,' Mr. Gray is inclined to believe that this species belongs to the same genus with *Em. Spengleri*, the toes, especially those of the hind feet, being

represented in the figure as quite free. The shells of the two species agree in being of a pale brown colour above, and in being sharply toothed on the margin; in both which respects they differ from the other *fresh-water Tortoises*.

GEOEMYDA.

Testa depressa, ad marginem latè serrata. Pedes utrinque squamis elongatis biseriatis instructi, haud ciliati: digiti liberi, subgraciles, supernè squamis tecti. Caput parvum, cute tenui, lævi, durâ obtectum.

Indiæ (et Africæ?) Incolæ.

1. GEOEMYDA SPENGLERI. *Geo. testâ oblongâ, pallidè brunneâ, tricarinatâ, carinis continuis nigro marginatis; margine posticâ profundè serratâ; sterno nigro luteo marginato; scutellis axillaribus inguinalibusque nullis.*
Testudo Spengleri, *Walb., in Berl. Naturf., theil* v. *t.* 3.
Testudo serrata, *Shaw, Gen. Zool., vol.* iii. *t.* 9.
Testudo tricarinata, *Bory St. Vinc., Atlas, t.* 37. *f.* 1.
Emys Spengleri, *Schweig.*, 32.
Hab. "in Chinâ," J. R. Reeves, Esq.

2. GEOEMYDA SPINOSA. *Geo. testâ suborbiculari, carinatâ; areolis spinâ centrali armatis; margine totâ profundè serratâ; suprà pallidè fuscâ, sterno pallidè fusco brunneo radiato; scutellis axillaribus inguinalibusque mediocribus.*
Emys spinosa, *Bell, Test., t. . fig.* 1, 2.—*Gray, Hardw. Ind. Zool., tom.* ii. *t. . fig.* 1.
Hab. "apud Penang," Capt. Hay.

A new genus of *Geckotidæ* is characterized by Mr. Gray under the name of

GEHYRA.

Digiti 5–5, ad basin dilatati, serie unicâ squamarum transversalium integrarum tecti, ad apicem compressi, liberi, omnes (præter pollices) unguiculati. Pori femorales nulli.

This genus is very nearly allied to *Platydactylus*, Cuv., in the form of the base of the toes; but the ends of the toes are thin, simple, and compressed, instead of being more widely dilated, and with the last *phalanx* affixed along the upper surface. The body is covered with small uniform granular scales, and the belly with larger flat scales; the tail is ringed with square scales, those of the under surface being the largest.

GEHYRA PACIFICA. *Ge. pallidè brunnea albido punctata, subtùs alba; occipitis strigâ utrinque fasciisque latis irregularibus dorsalibus quinque vel sex pallidis; artubus pallido marmoratis.*
Long. *corporis* 2¼ poll.; *caudæ*, totidem.
Hab. in Insulâ quâdam Oceani Pacifici.

The collection of the British Museum contains a specimen, much discoloured, of what appears to be a second species of this genus. Another species is contained in the Muséum d'Histoire Naturelle at Paris.

A living specimen was exhibited of the *Red Viper* of the Somersetshire Downs. It had been sent from Taunton to Mr. Gray, who states that he has compared it very attentively with the *black* and with the *common Viper* of England, and that he cannot discover the slightest difference between them except in the shade of the colour. They all agree in having the upper lip shield white, with brown or black edges, and in having a series more or less distinct of lozenge-shaped spots. He consequently refers them all to *Vipera Berus*, Daud.

Mr. Gray also states that he believes the *Lacerta ædura*, described by the Rev. R. Sheppard in the seventh volume of the 'Linnean Transactions', to be the male, observed during the summer, of the common *Lacerta vivipara*, the *Lacerta agilis* of British authors; the several characters which were pointed out by Mr. Gray at the Meeting on May 22, 1832, (Proceedings of the Committee of Science, Part ii. p. 112,) being at that season so fully developed as to produce the appearances noticed by Mr. Sheppard in his account of his presumed species.

The following notes were read of the dissection of a specimen of *Azara's Opossum*, *Didelphis Azaræ*, Temm., which recently died at the Society's Gardens. The general dissection was performed by Mr. Martin; that of the organs of generation by Mr. Rymer Jones.

"The animal was an adult male, measuring, exclusive of the tail, 1 foot 5 inches, the tail being 1 foot 4 inches in length.

"On opening the body the situation of the *viscera* was as usual. Their examination afforded the following details.

"The liver was found to consist of three lobes; one on the left, of a pyramidal figure, a large central lobe, and one on the right, small, irregular in shape, with a bifid margin. On the convex or external aspect of the middle lobe, the gall-bladder showed itself, filling up a circular aperture so regularly defined as to appear artificial; and on turning back the liver, the gall-bladder was seen to occupy a deep *sulcus*, incomplete or unclosed (as it were) in its centre. The gall-bladder was of a globular form, its diameter being about $\frac{1}{4}$ of an inch; its duct ran in a furrow, which took its course midway across the lobe on its under surface. At 2 inches from the neck of the gall-bladder, this cystic duct was joined at an acute angle by the hepatic ducts, the number of which corresponded with that of the lobes. The *ductus choledochus communis* thus formed continued its course for nearly 2 inches, and entered the *duodenum* about the same distance below the *pylorus*, the aperture being very small and valvular. With the biliary duct, the pancreatic also en-

tered the intestine, there being but one common termination between them. On tracing the pancreatic duct it was found issuing from the middle of the right extremity of the gland, which latter was somewhat irregular in shape, having each extremity divided into two *cornua*, and to the junction of the two right *cornua* the duct was easily traced. The length of the *pancreas* was 2¼ inches.

"The stomach was ovoid in form, the cardiac portion occupying nearly one half of the *viscus*, and the pyloric orifice being not more than ¼ an inch from the cardiac. The position of the pyloric valve was marked by a deep indentation. The length of the stomach was 3 inches; its diameter opposite the cardiac orifice, 2¼.

"The spleen was attached by a loose fold of mesentery to the middle of the greater curvature of the stomach, and was somewhat triangular in shape. It was 2¼ inches in length, and 1¼ in breadth at the broadest part.

"The *duodenum* was attached throughout by a mesenteric fold, its diameter was about ¼, or nearly an inch. From the *duodenum* the small intestines gradually diminished in diameter to the ileo-colic valve, their diameter in the narrowest part being reduced to ¼ an inch. The total length of the small intestines was 3 feet 7 inches. The *cæcum* was simple in figure, with a blunt *apex*, and measured 2 inches in length. The large intestines measured 4¼ inches.

"The kidneys were of the usual shape and exhibited no difference in their respective situation, neither being placed higher than the other. The membranous capsule was little adherent, and no superficial vessels were observable. The *papilla* was single. The length of each kidney was 2¼ inches, the breadth ¾, and the thickness ¾. The renal capsules appeared wanting.

"The lungs were very irregularly divided, there being four lobes on the right side and but one, without any fissure, on the left.

"The rings of the *trachea* at its upper part formed nearly an entire circle, which, as they proceeded downwards, became less and less complete till, at the lower part, three-fourths only of the ring was cartilage. The number of rings was twenty-one, but many were so bifurcated at the lower part as to render it doubtful whether they should be counted as double or single.

"The sterno-thyroid and sterno-hyoid muscles were very strong and distinct. The thyroid glands were found lying one on each side of the first six rings of the *trachea*, and measured ¾ of an inch in length.

"The mucous lining of the *œsophagus* was puckered into longitudinal *rugæ* throughout its whole extent, except for the last ¾ths of an inch, where the *rugæ* were transverse.

"The length of the tongue from the *epiglottis* was 3¾ inches, its breadth ¾. Its *apex* was flat and round, and the middle of the anterior portion of its *dorsum* or upper surface covered with retroverted *papillæ*, a line of fungiform *papillæ* occupying each side of the

root, between which three isolated *papillæ* appeared very distinct, forming the three angles of a triangle. The submaxillary glands were 1¼ in length, ¼ inch in breadth, and ¼ in thickness.

"To the above details I am able, through the kindness of Mr. Rymer Jones, to add a description of the organs of generation, illustrated by a sketch, which that gentleman was so obliging as to make from the parts dissected. In removing the skin from the animal the penis had been injured.

"The bladder was 1¼ inch in length and ¼ in breadth, its shape being oval. The muscular coat was thick. The fibres were gathered into strong transverse *rugæ* on the anterior and posterior aspects of the *viscus*, while laterally they formed two longitudinal bands, each ¼ inch in breadth, running from the *fundus* to the neck. Beneath the transverse groups of fibres another set was found affecting a longitudinal direction.

"The end of the *penis* being deficient,—what remained measuring 1¼ inch,—the *urethra* measured 5 inches in length; the length of its prostatic portion being 2¾ inches, of the membranous ¾, of the spongy 1¼. Its circumference at the neck of the bladder and throughout the prostatic portion was ¼ of an inch, at the membranous portion only 1¼ line, at the bulbous portion it was again dilated to ¼ of an inch. The lining membrane presented no folds, but was perforated along the whole prostatic portion by innumerable microscopic apertures arranged in parallel rows, through which on squeezing the prostate its secretion oozed.

"The ureters entered the bladder by two little apertures placed close together immediately above its neck.

"The *vasa deferentia* terminated by two small orifices upon the under surface of the *urethra*, about 2 lines from the commencement of its prostatic portion.

"The prostate, 2¾ inches in length, inclosed the commencement of the *urethra* for that extent, with a glandular envelopment $\frac{3}{10}$ths of an inch in thickness. Its commencement was marked by a decided line of black matter, and the first half inch of its extent was tinged by the same dark substance, resembling in colour the section of a bronchial gland. The succeeding inch was of a creamy white hue, while the last portion presented a dingy green tinge. Its ducts have been described.

"Cowper's glands were two in number on each side, flask-shaped, of the size of large peas, soft in texture, of a white colour, and wrapped in a fibrous envelope. The ducts from the glands on each side joined before entering the *urethra*, and the four opened by two orifices, at the commencement of the bulbous portion of that tube.

"The bulb of the *corpus spongiosum* was divided into two parts, each of an oblong shape, ⅛ths of an inch in length, and ¼ in thickness; the *parietes* formed by a strong muscle constituting nearly the whole mass.

"The *crura penis* were unattached to the *ischia*, but were enveloped in a muscular sac, the walls of which were the eighth of an inch in thickness."

In illustration of the notes, preparations were exhibited of the stomach and *cæcum*, as was also the drawing above referred to of the organs of generation and bladder.

September 9, 1834.

Joseph Cox Cox, Esq., in the Chair.

A letter was read, addressed to the Secretary by Dr. E. Rüppell, and dated Frankfort, August 10, 1834. It was accompanied by specimens of *Magilus antiquus*, Rupp., including both the shell and the animal, and of the shell and animal of a new genus of *Pectinibranchiated Gasteropodous Mollusca*. The latter was accompanied by a description by Dr. Rüppell, who characterizes it under the designation of

LEPTOCONCHUS.

Testa tenuis, pellucida, subglobosa, spirâ depressâ, subobsoletâ: *aperturâ* magnâ, subovali, extremitatibus in contrarium versis, marginibus haud coalitis, dextro tenui anticè subexpanso: *columellâ* nullâ, *umbilico* nullo, anticè truncatâ, contortâ.

Animal proboscide elongato, retractili: *tentaculis* duobus, complanatis, trigonis, internè ad basin coalitis, externè in medio oculos gerentibus: *pede* mediocri, *operculo* nullo: *pallio* ad marginem circulari, haud appendiculato, ad latus sinistrum subproducto: *foramine branchiali* submagno.

The colour of the shell which constitutes the type of this new genus is constantly a slightly sordid milk-white. It is sulcated externally by numerous longitudinal undulated closely set lines, the outer whorls encroaching on the spire of the earlier ones so as almost to obliterate it.

Length of the adult shell, 14¼ lines; greatest breadth, 12¼; length of the young shell, 7¼; breadth, 6.

Individuals of all ages have the shell thin and fragile, and constantly occur imbedded in the calcareous mass of polypes, having a communication with the sea by only a moderate opening. They are found in the Red Sea, and are most frequently met with in *Meandrina Phrygia*.

To distinguish the shell of *Leptoconchus* from that of *Magilus* it is sufficient to observe that in the latter the two margins of the aperture are always united, while in the former genus they are always disunited. The animals are distinguished by the possession and the want of an *operculum*, and by the difference in the *proboscis*; the *siphon* of *Magilus*, moreover, does not occur in *Leptoconchus*.

Dr. Rüppell suggests that the systematic place which should be assigned to this genus is near the *Ianthinæ*. The number of the *tentacula*, the oral *proboscis*, the mantle destitute of *siphon*, the pectinated *branchiæ* composed of closely heaped pyramids, and the absence of *operculum*, are so many marks of affinity; to which may be added some of the characters of the shell: but he states himself to be perfectly aware that the difference between the habitations of

these genera is so wide as to afford no confirmation of the correctness of this approximation.

A letter was read, addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nepal, March 4, 1834.

It commences by remarking on the difficulty experienced by Zoologists in the determination of distinctive marks adequate for the separation of the genera *Antilope*, *Capra*, and *Ovis*; and then refers to the instances in which the writer has shown that the character of *Antilope* founded on the presumed absence of cavities in the cores of the horns connected with the frontal sinuses is incorrect. The value of the characters which are generally admitted by authors as distinguishing between the genera *Capra* and *Ovis* may, he conceives, be tested by a comparison of the wild race of either genus which belongs to the Himalaya.

"For the last year," Mr. Hodgson proceeds, "I have had alive in my garden a splendid specimen of the mature male of each; and I have frequently compared them together in all respects of manners and of structure. As the *Goat* in question, as well as the *Sheep*, is new, I will begin with a synoptical description of the two, and then proceed to notice the points of difference and of agreement existing between them.

Tribe Capridæ, *H. Smith.*

Genus Capra, *Linn.*

Species *Capra Jhâral.*—The *Jhâral* of the Nepalese.

"Affined to the *Alpine Ægagri* and to *Capra Jemlaica*. Adult male 50 inches long from snout to rump, and 33 high. Head finely formed and full of beauty and expression, clad in close short hair, and without the least vestige of a beard. Facial line straight. Ears small, narrow, erect, rounded at the tips, and striated. Eye lively. Between the *nares* a black moist skin. *Nares* themselves short and wide. Knees and *sternum* callous. Tail short, depressed, wholly nude below. Animal of compact powerful make, with a sparish, short, and bowed neck; deep barrel and chest; longish, very strong, and rigid limbs, supported on perpendicular pasterns, and high compact hoofs: false hoofs conic and considerably developed. Attitude of rest gathered and firm, with the head moderately raised, and the back sub-arched. Shoulders decidedly higher than the croup. Fore quarters superb, and wholly invested in a long, flowing, straight, lion-like mane, somewhat feathered vertically from the crown of the withers, and sweeping down below the knees. Hind quarters poor and porcine, much sloped off from the croup to the tail, and the skin much constricted between the hams behind. Fur of two sorts: the outer, hair of moderate. harshness, neither wiry nor brittle, straight, and applied to the skin, but erigible under excitement, and of unequal lengths and colours; the inner, soft and woolly, as abundant as in the *Wild Sheep* and finer, of one length and colour. Horns 9 inches long, inserted obliquely on the crest of the frontals, and touching at the base with their anterior edges; subcompressed,

subtriangular, and uniformly wrinkled across, except near the tips, where they are rounded and smooth, keeled and sharpened towards the points, obtusely rounded behind; the edge of the keel neither nodose nor undulated, but smooth, or evanescently marked by the transverse wrinkles of the horns. The horns are divergent, simply recurved, and directed more upwards than backwards.

" Colour of the animal a saturate brown superficially, but internally hoary blue, and the mane, for the most part, wholly of that hue. Fore arms, lower part of hams, and backs of the legs, rusty. Entire fronts of the limbs, and whole face and cheeks, black-brown; the dark colour on the two last parts divided by a longitudinal line of pale rufous; and another before the eye, shorter. Lips and chin hoary, with a blackish patch on either side below the gape. Tip of tail and of ears blackish. Tongue and palate, and nude skin of lips and muzzle, black. *Iris* darkish red hazel. Odour very powerful in the mature male at certain times.

" Found in the wild state in the Kachâr region of Nepal, in small flocks or solitarily. Is bold, capricious, wanton, eminently scansorial, pugnacious, and easily tamed and acclimatised in foreign parts.

" Remarks. *Jhâral* is closely affined by the character of the horns to the *Alpine Ægagri*, and still more nearly, in other respects, to *Capra Jemlaica*. It differs from the former by the less volume of the horns, by their smooth anterior edge, and by the absence of the beard; from the latter, by the horns being much less compressed, not turned inwards at the points, nor nodose. *Jhâral* breeds with the *domestic Goat*, and more nearly resembles the ordinary types of the tame races than any wild species yet discovered.

Genus Ovis, *Linn.*

" Species *Ovis Nâhoör*, Mihi.—The *Nâhoör* of the Nepalese. New? Variety of *Ovis Musmon*?

" Closely affined to *Ovis Musmon*, of which it is probably only a variety. Adult male 48 inches from snout to rump, and 32 high. Head coarse and expressionless, clad entirely in close short hair, without beard on the chin or throat, or any semblance of mane. Chaffron considerably arched. Ears medial, narrow, erect, pointed, striated. Eye dull. Moist space between the *nares* evanescent. *Nares* narrow and long. Knees and *sternum* callous. Tail medial, cylindrico-depressed, only half nude below. Structure moderately compact, not remarkable for power. Neck sparish, bowed, with a considerable dip from the crown of the shoulders. Limbs longish, firm, but slender, not remarkable for rigidity, and supported on lax pasterns, and on hoofs lower and less compact than the *Goat's*; false hoofs mere callosities. Attitude of rest less gathered and firm, with the head lower, and the back straight. Shoulders decidedly lower than croup. Fore quarters not more massive than the hind, nor the extremities stronger. Fur of two sorts: the outer, hair of a harsh, brittle, quill-like character, serpentined internally, with the salient bows of one hair fitting into the resilient bends of another; externally straight, porrect from the skin, and very abundant; of medial uniform length all over the body; the inner coat, soft and woolly,

rather spare, and not more abundant than in the *Goat*. Horns 22 inches along the curve, inserted high above the orbits on the crown of the forehead, touching nearly at the base with their whole depth, and carrying the frontal bones very high up between them, the parietals being depressed in an equal degree*. The horns diverge greatly, but can scarcely be said to be *spirally* turned. They are first directed upwards considerably before the facial line, and then sweep downwards with a bold curve, the points again being recurved upwards and inwards. They are uncompressed, triangular, broadly convexed to the front, and cultrated to the back. Their anterior face is the widest, and is presented almost directly forwards: their lateral faces, which are rectilinear, have an oblique aspect, and unite in an acutish angle at the back. They are transversely wrinkled, except near the tips, which are round and smooth.

"The colour of the animal is a pale slaty blue, obscured with earthy brown, in summer overlaid with a rufous tint. Head below, and inside of the limbs and hams, yellowish white. Edge of the buttocks behind and of the tail pure white. Face and fronts of the entire limbs and chest blackish. Bands on the flanks the same, and also the tip of the tail. Tongue and palate dark. Eye yellow hazel. No odour.

"Is found in the wild state in the Kachâr region of Nepal, north of the *Jhâral*, amid the glaciers of the Himalaya, and both on the Indian and Tibetan sides of the snowy crests of that range: is sufficiently bold and scandent, but far less pugnacious, capricious, and curious than the *Jhâral*. Much less easily acclimatised in foreign parts than he is, in confinement more resigned and apathetic, and has none of the *Jhâral's* propensity to bark trees with his horns, and to feed upon that bark and upon young shoots and aromatic herbs. I have tried in vain to make the *Nâhoŏr* breed with tame *Sheep*; because he will not copulate with them. The female of the species has the chaffron straight; and the horns short, erect, subrecurved, and greatly depressed. The young want, at first, the marks on the limbs and flanks, and their nose is straight.

"Remarks. Differs from *Ovis Musmon*, to which it is closely allied, by the decided double flexure of the horns, their presence in the females, and the want of a tuft beneath the throat.

"Having now completed the descriptions of the *Wild Goat* and the *Wild Sheep*, I shall proceed to the exhibition of the points of difference and of resemblance between the two, beginning with the former.

Goat.	*Sheep.*
Whole structure stronger and more compact.	Less so.
Limbs thicker and more rigid.	Feebler and more slender.

* The *Goat's* skull has the same form, but less strikingly developed; and unless I am mistaken, this form of the skull would afford a just and general mark to separate *Ovis* and *Capra* from *Cervus* and *Antilope*. There is a gradation of characters in this respect among the *Antelopes* tending to the *Caprine* type in their general structure.

Goat.	*Sheep.*
Hoofs higher and more compact.	Lower and less so.
False hoofs well developed.	Evanescent.
Head smaller and finer.	Larger and heavier.
Facial line straight.	Chaffron arched.
Ears shorter and rounded.	Longer and pointed.
Tail short, flat, nude below.	Longer, less depressed, and half nude only.
Withers higher than croup.	Croup higher.
Fore legs stronger than hind.	Fore and hind equal.
Croup sloped off.	Not so.
Odorous.	Not so.
Nose moister, and *nares* short and wide.	Less moist, longer, and narrower.
Horns of medial size, keeled, and turned upwards.	Horns very large, not keeled, and turned to the sides.
Eye darker and keener.	Paler and duller.
Hair long and unequal.	Short and equal.
Back arched.	Back straight.
Bears change of climate well.	Bears it ill.
Is eminently curious, capricious, and confident.	Is incurious, staid, and timid.
Barks trees with its horns, feeding on the peel, and on aromatic herbs.	Does not bark trees, and is less addicted to aromatics.
In fighting rears itself on its hind legs and lets the weight of its body fall on the adversary.	In fighting runs a-tilt, adding the force of impulse to that of weight.

" The *Goat* and *Sheep* have in common, hair and wool; no beard; no suborbital sinuses; evanescent muzzle; no inguinal pores; horns in contact at the top of the head; knees and *sternum* callous; angular and transversely wrinkled horns; striated ears; two teats only in the females; horns in both sexes; and, lastly, incisors of precisely the same form.

" Of the various diagnostics, then, proposed by Col. Hamilton Smith, it would seem that the following only can be perfectly relied on to separate *Ovis* from *Capra*: slender limbs; longer pointed ears; chaffron arched; *nares* long and oblique; very voluminous horns, turned laterally with double flexures. I should add myself, the strong and invariable distinction,—males not odorous,—as opposed to the males odorous of the genus *Capra*. But, after all, there are no physical distinctions at all equivalent to the moral ones so finely and truly delineated by Buffon, and which, notwithstanding what Col. H. Smith urges in favour of the courage and activity of *Sheep*, will, for ever, continue to be recognised as the only essential diagnostics of the two genera."

September 23, 1834.

Dr. Marshall Hall, in the Chair.

A letter was read, addressed to the Secretary by John Hearne, Esq., Corr. Memb. Z.S., and dated Port au Prince, July 16, 1834. It accompanied a present of "an *Alligator* from the river Artiboniti," which is referrible to the *Crocodilus acutus*, Cuv.; and of some *Doves*. These are the *little Ground Dove* or *Ortolan* of the English residents in Hayti, *Columba passerina*, Linn.; and the *red-legged Partridge*, as it is called in that island, *Col. mystacea*, Temm. Mr. Hearne adverts to some other animals which he has observed in Hayti, and expresses his hopes of succeeding in bringing or sending them to England.

The Secretary adverted to some other animals lately added to the Menagerie, and which he regarded as interesting either in a scientific point of view, or on account of their not having been previously contained in the collection. They included the *silky Monkey, Midas Rosalia*, Geoff., of which a specimen has recently been presented by T. Manton, Esq.; the *Javanese Ichneumon, Herpestes Javanicus*, Geoff.; the *African Moufflon, Ovis Tragelaphus*, Geoff., presented by Sir Thomas Reade, His Majesty's Consul-General at Tunis; and a remarkably darkly coloured variety of the *European Bear, Ursus Arctos*, Linn., presented by R. H. Beaumont, Esq.

Among the *Birds* there have been added a pair of the *pied Pigeon* of New Holland, *Columba armillaris*, Temm.; a pair of the *Capercailzie* or *Cock of the Woods, Tetrao Urogallus*, Linn., obtained from Norway and presented to the Society by J. H. Pelly, jun., Esq.; a pair of the *Buffonian Touraco, Corythaix Buffonii*, Le Vaill.; and a specimen of the *naked-legged Owl* of the Indian Islands, *Ketupa Javanensis*, Less., (*Strix Ketupu*, Horsf.,) presented by James Harby, Esq., and stated to have been brought from Manilla.

Among the *Reptiles* there have recently been added an interesting collection of *Tortoises* from China, presented by John Russel Reeves, Esq., of Canton, and including specimens of the *three-banded Box-Tortoise, Cistuda trifasciata*, Gray; of *Spengler's Terrapin, Geoemyda Spengleri*, Gray, (*Testudo Spengleri*, Walb.); of the *Emys Sinensis, Em. Reevesii*, and *Em. Bealii*, all lately described by Mr. Gray; and also of the *Platysternon megacephalum*, Gray. A *Crocodile* apparently referrible to the *Crocodilus cataphractus*, Cuv., is also at present living in the Menagerie: its nuchal plates constitute a series continuous with those of the back, but consist of only four rows instead of five, the number existing in the individual on which the species was originally founded. The specimen is stated to have been brought from Fernando Po.

Mr. Ogilby called the attention of the Meeting to a specimen of

an *Irish Otter*, which he at the same time presented to the Society in the name of Miss Anna Moody of the Roe Mills near Newtown Lemavaddy, by whom it was preserved and mounted. On account of the intensity of its colouring, which approaches nearly to black both on the upper and under surface; of the less extent of the pale colour beneath the throat as compared with the *common Otter, Lutra vulgaris*, Linn., as it exists in England; and of some difference in the size of the ears and in the proportions of other parts; Mr. Ogilby has long considered the *Irish Otter* as constituting a distinct species; and he feels strengthened in this view of the subject by the peculiarity of its habitation and manners. It is, in fact, to a considerable extent a marine animal, being found chiefly along the coast of the county of Antrim, living in hollows and caverns formed by the scattered masses of the basaltic columns of that coast, and constantly betaking itself to the sea when alarmed or hunted. It feeds chiefly on the salmon, and as it is consequently injurious to the fishery, a premium is paid for its destruction; and there are many persons who make a profession of hunting it, earning a livelihood by the reward paid for it and by disposing of its skin. Mr. Ogilby stated his intention of comparing it minutely with the *common Otter* as soon as he should be enabled to do so by the possession of entire subjects, and especially of attending to the comparison of the osteological structures. He added that he proposed to designate it, provisionally, as the *Lutra Roensis*, in honour of the lady by whom it was presented.

Mr. Owen read a "Description of a recent *Clavagella*," founded on the examination of an individual brought home by Mr. Cuming and imbedded in siliceous grit. The portion of rock contained the whole of the expanded cavity excavated for the abode of the animal, together with the fixed valve of its shell and about an inch of its calcareous tube: the loose smaller valve was detached from the soft parts. Mr. Owen describes in detail the fixed valve, which corresponds to the left side of the animal's body; the attachment to it of the adductor muscles, two in number; its passage into the calcareous tube by a continuance of the shelly substance; the tube itself, which communicates with the posterior part of the chamber next the side which corresponds with the ventral surface of the animal; and the free valve. He regards it as probable that the animal of this species, having penetrated into the rock for a certain distance, then becomes stationary, and limits its operations to enlarging its chamber to the extent required for the development of its ovary: this enlargement takes place in the dorsal, dextral, and anterior directions.

The soft parts of *Clavagella* form an irregularly quadrate mass, convex anteriorly, rather flattened at the sides, and slightly narrowing towards the posterior end, from which the smooth rounded *siphon* is continued. This contains the anal and branchial canals, which are separated by a strong muscular *septum*, but do not project as distinct tubes: in this respect *Clavagella* agrees with *Gastro-*

chæna and *Aspergillum*. The mantle is a closed sac, having only an opening for the passage of the *siphon* and a small slit at the opposite end for the passage of a rudimentary foot: the use of this slit in *Clavagella* is obviously different from that assigned by M. Rüppell to the corresponding structure in *Aspergillum*.

Mr. Owen describes the mantle and its structure; the *siphon*; and the thick mass of muscular fibres at the anterior part of the mantle, which forms probably one of the principal instruments in the work of excavation: he also notices the great development, as compared with the size of the animal, of the adductor muscles. He then proceeds to the *viscera*, which generally agree with the typical structure in other *Bivalves*. The digestive system, which accords with that which is usual in *Acephalous Mollusca*, is described; as are also the respiratory and circulating systems, the principal nervous *ganglia*, and the ovary.

The paper was accompanied by drawings illustrative of the several structures described in it.

The specimen described belongs to the species termed by Mr. Broderip *Clavagella lata*.

October 14, 1834.

William Yarrell, Esq., in the Chair.

A letter was read, addressed to the Secretary by Sir Robert Ker Porter, Corr. Memb. Z.S., dated Caraccas, July 24, 1834. In reference to the *Tortoises* (*Testudo Carbonaria*, Spix,) presented to the Society by the writer in the spring of the present year (see p. 41), it stated that they are regarded as a great delicacy at Caraccas, and sold as such in the market. It also stated that some eggs of *Curassows*, or *Powies*, spoken of in a previous letter, had been placed under a hen, but had not produced young, having, as Sir Robert imagines, been by some accident injured in the shell. He had, however, a few days previously to the date of his letter, placed another, just laid by the bird, and hoped to be more successful, in which case he promises to give some particulars relative to the experiment.

A letter was read, addressed to the Secretary by the Hon. Byron Cary, dated His Majesty's ship Dublin, Sept. 25, 1834, giving some particulars relative to a large specimen of the *Tortoise* from the Gallapagos Island, presented by the writer to the Society. The specimen weighs 187 lbs. and measures in length, over the curve of the dorsal shell 3 feet 8¼ inches, and along the ventral shell 2 feet 3¼ inches, its girth round the middle being 6 feet 3¼ inches. It is consequently much smaller than several specimens of the *Indian Tortoise* from the Seychelles Islands which have at different times been exhibited in the Society's Garden; the weight and measurements of one of which are given in the Proceedings of the Society for 1833, p. 81. The lateral compression of the anterior part of the dorsal shell, and the elevation of its front margin, by which the *Gallapagos Tortoise* is distinguished from the *Indian*, are in this specimen strongly marked.

The following notes by Mr. Martin of the dissection of a specimen of the *Mangue* (*Crossarchus obscurus*, F. Cuv.) were read.

"The dissection was strongly confirmatory of the justice of the position claimed for the animal, notwithstanding its plantigrade mode of progression, between the *Ichneumons* and the *Suricates*. To the latter indeed it bears in its general external aspect and characters a marked affinity; in both we find the pupil circular, and the muzzle elongated, pointed, and moveable. Nor is there much less correspondence in their general anatomy. Fortunately the notes of the dissection of two *Suricates*, which were living for a considerable period in the possession of the Society, have enabled me to make an accurate comparison. The notes to which I allude are by Mr. Owen, and will be found in the First Part of the 'Proceedings of the Committee of Science and Correspondence' for 1830–1, pp. 39 and 51.

"The *Mangue* which I had the opportunity of examining was a

female, and measured in the length of its body 1 foot: the tail was imperfect. The animal was in good condition; indeed it was rather too much loaded with fat to be perfectly active. On the *abdomen* being opened the liver and the small intestines presented themselves, the latter being covered by an extensive *omentum*; the stomach was concealed beneath the liver. The liver was tripartite, with a *lobulus Spigelii*, and consisted of one large right, and two left lobes; the latter together not exceeding in size the single one on the right. On the under surface of the right lobe, near the edge, lay the gall-bladder, almost globular in shape, and measuring nearly $\frac{1}{4}$ths of an inch from the *fundus* to the neck. It was full of dark greenish bile. At the distance of $\frac{1}{4}$ths of an inch from the neck, the biliary duct was joined by the hepatic: the *ductus choledochus communis* then continued on for more than $\frac{1}{4}$ an inch, and entered the *duodenum* about $\frac{1}{4}$ of an inch below the *pylorus*. The spleen, flat, elongated, and narrow, occupied the usual situation, and was enveloped in a fold of *omentum*, giving, when stretched out, a width of $1\frac{1}{4}$ inch. On turning back the stomach, the pancreatic gland was seen, having a large process situated beneath the spleen and stomach; the portion immediately covered by the latter dilating and forming a ring, attached to the *duodenum* for the distance of 3 inches. In the *Suricate*, this *viscus* is very similar, both in figure and situation. Mr. Owen observes that "a transverse portion extends from the spleen behind the stomach to the *pylorus*; it then divides and forms a circle, which lies in the concavity of the great curve of the *duodenum*;" and subsequently notices its resemblance to "the neutral symbol of the entomologist ρ.' Such also is the figure of the *pancreas* of the *Mangue*.

"The stomach was very muscular, with longitudinal *striæ* along its larger curvature, and singularly contracted in the middle. It is to be observed, however, that it was perfectly empty: when distended with air, the *striæ* and contraction disappeared.

"The small intestines did not much exceed a common quill in circumference; they decreased in size from the *duodenum*, which was very delicate. The small intestines measured 4 feet $2\frac{1}{4}$ inches, and the large $4\frac{1}{4}$ inches, without bands, or *sacculi*. The *cæcum* was 1 inch in length and pointed. On each side of the *anus* were situated two follicles of the size of a small horsebean, containing a thick unctuous, but nearly inodorous matter. They opened externally on the verge of the *anus*.

"The kidneys, of which the right was rather higher than the left, were of the usual shape, and 1 inch in length. Their cortical structure was very distinct; the *tubuli* terminated in one large conical *papilla*. On the outer surface there ramified an arborescence of small veins, as in the *Cat*, but by no means so beautifully and regularly distributed. In this respect also the *Mangue* agrees with the *Suricate*, as well as with the *Viverridæ* generally. The supra-renal glands were flat and oval; their external coat was grey; and beneath this was spread an inner layer, resembling liver in colour and texture.

"The bladder was small and contracted: the *uterus* measured ¼ an inch, its *cornua* 1¼ inch, and the *vagina* 1¼ inch, its internal lining being puckered longitudinally.

"The lungs consisted of three lobes on the right, and two on the left side: in the *Suricate* there are four on the right and three on the left. The heart is obtuse at its *apex*, and of a thick rounded figure, being ¼ths of an inch from the base to the *apex* and 1¼ in breadth across the base. The tongue was 2 inches long, smooth at the sides, but covered in the centre towards the tip with retroverted sharp bristly *papillæ*: at the base were three isolated *papillæ* forming a crescent, thus ∘∘∘. The sublingual glands were of the size of hazel-nuts. The *epiglottis* was pointed and curled forwards: the number of rings in the *trachea* was thirty-eight. The thyroid glands were situated on each side of the twelve upper rings of the *trachea*; they were of large size, measuring ¼ths of an inch in length. The *œsophagus* exhibited longitudinal *rugæ* along its inner surface.

"In the disproportion between the large and small intestines; in their small circumference; in the form of the *cæcum*; in the venous ramifications on the surface of the kidneys; as well as in other minor points; we cannot fail to observe the close similarity, not alone between the *Mangue* and the *Suricate*, but between both these animals and the *Viverridæ* in general."

A collection was exhibited of skins of *Birds*, formed by B. H. Hodgson, Esq., Corr. Memb. Z.S., in Nepal, and presented by him to the Society. These birds were brought under the notice of the Meeting by Mr. Gould, who, at the request of the Chairman, pointed out the most interesting among them, both as regarded the Society's collection, and with reference to their novelty or the peculiarities of their form. As, however, Mr. Hodgson himself purposes to describe at length the characters and habits of the several species in his proposed 'Zoology of Nepal,' Mr. Gould abstained from entering more particularly into those topics.

A paper was read "On *Clavagella*, by W. J. Broderip, Esq." It was accompanied by drawings illustrative of the new species described in it.

The author commences by a history of the genus from the time when Lamarck established it for the reception of four fossil species, two of which he had previously referred to his genus *Fistulana*. A recent species was subsequently described and figured by Mr. G. B. Sowerby, in his 'Genera of Recent and Fossil Shells,' under the name of *Clav. aperta*; and a second recent species, *Clav. Australis*, has since been described and figured by the same conchologist; M. Audouin has noticed another recent *Shell* which he refers to this genus; and some details have been published by M. Rang of an additional recent species, his *Clav. Rapa*. The collection of Mr. Cuming furnishes another recent species, the anatomy of which formed the subject of a paper read by Mr. Owen at the last Meeting of the Society; there exists yet another in that of Mr. Isaac Lyon Goldsmid; and another in those of Mr. Cuming and Mr. Miller.

A close examination of the recent species which he has observed has convinced Mr. Broderip that although one valve of the shell is always fixed or imbedded in the chamber formed in the hard surrounding substance, the tube is not necessarily continued into a complete testaceous clavate shape, and that consequently the character assigned by Lamarck to the genus requires emendation. The fixed valve is in all these species continued on to the tube. In Mr. Cuming's the perforated shelly plates are situated not far from the throat of the tube, one on either side; while in Mr. Goldsmid's the perforated plate is single, and seated at the anterior or greater end of the ovate chamber, being in the smaller individual joined laterally to the anterior ventral edge of the fixed valve, and in the larger one wholly isolated from it. In all the specimens the anterior edge of the fixed valve is surrounded by the naked wall of the chamber.

After remarking on the difficulty of clearly defining species where the roughness or smoothness of the surface of the shell and even its shape may depend upon the greater or less degree of hardness of the material of which the chamber is formed; where colour also is absent; and from specimens of which the tubes are broken; Mr. Broderip proceeds to suggest the following distinguishing characters. The first two may, he remarks, hereafter prove to be mere varieties, although he is strongly disposed to regard them as constituting distinct species:

CLAVAGELLA ELONGATA. *Clav. camerâ elongato-ovatâ; valvâ liberâ elongatâ, subtrigonâ, convexâ, externè concentricè valdè rugosâ, intùs nitente; umbone acuto.*

Hab. in Oceano Pacifico?

Mus. Goldsmid.

The wall of the coral chamber against which the free valve rested gives as exact an impression of the external rugosities of that valve as if the valve had been applied to a surface of wax.

CLAVAGELLA LATA. *Clav. camerâ rotundato-ovatâ; valvâ liberâ latiusculâ, subtrigonâ, subconvexâ, externè concentricè rugosâ, intùs nitente; umbone subrotundato.*

Hab. in Oceano Pacifico.

Mus. Cuming.

Both valves are nacreous internally; and the muscular impressions, especially in the fixed valve, are very strong.

CLAVAGELLA MELITENSIS. *Clav. testâ subrotundatâ, rugosâ, intùs subnitente; tubo longitudinaliter corrugato.*

Hab. ad Melitam.

Muss. Cuming, Miller.

It is not impossible, from its locality, that this may turn out to be M. Audouin's species, if that should prove to be a true *Clavagella*. M. Sander Rang's remarks, however, go far to show that a Sicilian *Shell* referred to this genus, has been incorrectly so referred, in as much as it has no fixed valve. The one described above has the fixed valve continued on to the shelly tube as in the other recent species of the genus *Clavagella*.

Mr. Broderip conjectures that *Clavagella* may be in its very young state a free *Bivalve*, floating at large until it arrives at some vacant hole that suits it, when it attaches one valve to the wall of the hole, and proceeds to secrete the tube or siphonic sheath, to enlarge the chamber according to its necessities, and to secrete the shelly perforated plate which is to give admission to the water at the practicable part of the chamber. The excavation may probably be assisted by the secretion from the glands observed by Mr. Owen, and evidently cannot be effected in the greater end of the chamber by mere mechanical attrition; but the solvent secretion must be one of extensive powers to act on such different substances as siliceous grit, the coral of an *Astræopora*, calcareous grit, and argillo-calcareous tufa, in which respectively were found the *Clav. Australis*, *Clav. elongata*, *Clav. lata*, and *Clav. Melitensis*.

Adverting to the different depths at which these several species were found, which varied from near low-water mark to sixty-six feet, Mr. Broderip remarks, that inferences as to the state of submersion of a rock during the lifetime of the fossil species which there occur, ought consequently to be made with caution by the geologist.

In conclusion he observes, that though the genus *Clavagella* is in its recent state at present rare, it is in all probability widely diffused; and suggests to collectors a careful examination of masses of coral and submerged perforated rocks with a view to the further elucidation of the habits and structure of these and other interesting animals.

October 28, 1834.

Richard Owen, Esq., in the Chair.

Living specimens were exhibited of a species of *Bee* from South America, together with portions of its Comb, contained in the fissure of a log of wood. They were presented to the Society by Mr. Bigg, who stated, in a note accompanying the specimens, that they were found about three weeks since on splitting a log of peachwood from the Brazils for the use of a dye-house, on the premises of Mr. Applegath, a calico-printer at Crayford in Kent. The wood had been previously lying in the docks, and had been perhaps eighteen months from the Brazils.

Mr. Curtis, to whom specimens were submitted for examination, states that they belong to the genus *Trigona*, Jur., and form a very pretty and apparently undescribed species.

Mr. Yarrell exhibited preparations of both sexes of *Syngnathus Acus*, Linn., and *Syngn. Typhle*, Ej., in illustration of the following extract from the manuscript notes of the late John Walcott, Esq., author of 'A Synopsis of British Birds,' 'History of Bath Fossils,' and 'Flora Britannica Indigena.' This manuscript, which is voluminous, and relates wholly to British Fishes, was written during the author's residence at Teignmouth, in the years 1784 and 1785, and has been forwarded by his son William Walcott, Esq., of Southampton, to Mr. Yarrell, for his use in a projected work on 'British Fishes.'

"*Syngnathus Acus* and *Typhle*.—The male differs from the female in the belly from the vent to the tail fin being much broader, and in having for about two thirds of its length two soft flaps, which fold together and form a false belly. They breed in the summer, the females casting their roe into the false belly of the male. This I have asserted from having examined many, and having constantly found, early in the summer, roe in those without a false belly, but never any in those with; and on opening them later in the summer there has been no roe in (what I have termed) the female, but only in the false belly of the male."

The specimens exhibited of females of *Syngn. Acus* and *Typhle* had no anal pouch, and the opened *abdomen* exposed two lobes of *ova* of large size in each. The anal pouch is peculiar to the males, and is closed by two elongated flaps. On separating these flaps and exposing the inside, the *ova*, large and yellow, were seen lining the pouch in some specimens, while in others the hemispheric depressions from which the *ova* had been but lately removed were very obvious. In each of these the opened *abdomen* exhibited true *testes*.

Mr. Walcott adds: "They begin to breed when only between 4 and 5 inches long." A specimen of *Syngn. Acus*, nearly 16 inches long, was exhibited, indicating, probably, its extreme growth. A female

of the same species, only 4 inches long, was also shown, the *abdomen* of which contained two lobes of enlarged *ova*, which, to all appearance, would have been deposited in a few days.

Specimens of males and females of *Syngn. Ophidion*, Linn., were also exhibited. In this species neither male nor female possesses an anal pouch, but the *ova* are carried by the male in hemispheric depressions on the external surface of the *abdomen*, anterior to the *anus*. All the specimens examined having these external depressions proved to be males, with the *testes* in the *abdomen* very obvious: those without external depressions proved to be all females, internally provided with two lobes of enlarged *ova*. The males of this species, when taken by Mr. Yarrell from the sea, had one *ovum* of the size and colour of a mustard-seed fixed in each cup-shaped depression, but time and the effects of a long journey had removed them. Dr. Fleming in his 'History of British Animals,' page 176, states the length of *Syngn. Ophidion* at about 5 inches: some of Mr. Yarrell's specimens measured 9 inches.

Mr. Yarrell further stated that the males of *Syngn. Acus* carry their living young in the anal pouch, even after they have been hatched there. He had been frequently told by fishermen that on opening them they had found the living young within the pouch, which they called the belly; and that if these young were shaken out into the water over the side of the boat, they did not swim away, but when the parent fish was held in the water in a favourable position, the young would again enter the pouch.

It was observed by M. Agassiz, that the fact of the males of certain species of the genus *Syngnathus* carrying the *ova* in a peculiar abdominal pouch, after their exclusion by the female, had been noticed on the Continent by Eckström, Retzius, and Marcklin; and that he had himself made the same observation.

M. Agassiz exhibited drawings of several species of *Lepisosteus*, together with some of the details of their internal organization; and, at the request of the Chairman, explained his views with regard to their systematic arrangement and structure, as well as to their relations with various genera of fossil fishes, and the coincidence of some parts of their internal anatomy with that of *Reptiles*. He described two new species observed by him in the British Museum, taking his characters principally from the form and sculpture of the scales, the presence or absence of the short rays at the base of the caudal and other fins, and the variations in the form and disposition of the teeth. In reference to their internal structure, he particularly called the attention of the Meeting to the large and regular slit by which the swimming-bladder communicates with the *pharynx*; which he regarded as bearing even a closer resemblance to the entrance of the *trachea* of the pulmoniferous *Vertebrata* in general, than the aperture by means of which the lungs communicate with the *pharynx* in the *Perennibranchiate Amphibia*. He conceived, therefore, that the anatomy of these fishes offers a conclusive argument in favour of the theory, long since proposed, that the swimming-bladder of *Fishes* is

analogous to the lungs of the other *Vertebrata*. He spoke of the number of the cæcal appendages as greater in *Lepisosteus* than in any other fish which he had dissected; and referring to certain fossil bodies by which geologists have long been puzzled, and which have been regarded as fossil worms, he stated his opinion, from the close resemblance between the two, that they are in reality the cæcal appendages of the fossil fishes, in whose company they are generally found.

Mr. Gray exhibited young shells of *Argonauta Argo* and *Arg. hians*, with the view of calling the attention of the Society to a new argument in favour of the opinion that the animal (*Ocythoë*) found in the shells of this genus is parasitic. This argument is founded on the size of what Mr. Gray has termed the *nucleus* of the shell, viz. that original portion of it which covered the animal within the egg, and which is usually found to differ in surface and appearance from the remainder of the shell formed after its exclusion from the egg. In the specimens exhibited Mr. Gray described the *nucleus* as blunt, rounded, thin, slightly and irregularly concentrically wrinkled, and destitute of the radiating waves which are common to the adult shells of all the species of this genus. These waves he stated to commence immediately below the thin hemispherical tips, and he therefore entertained no doubt that those tips constituted the *nucleus* of the shell, and covered the embryo of the animal at the period of its exclusion from the egg. Judging from the size of this portion of the shell, which in one of the specimens measured nearly one third of an inch in diameter, and was consequently many times larger than the largest eggs of the *Ocythoë* found within the *Argonaut* shells, Mr. Gray inferred that it must have been produced by an animal whose eggs are of much greater magnitude. The *Ocythoë* cannot therefore, he conceived, be the constructor of the shell, and its true artificer still remains to be discovered. Mr. Gray further remarked, with reference to Poli's statement that he had observed the *rudiment* of a shell on the back of the embryo of *Ocythoë* examined by him, that he has himself uniformly found, in all the eggs of *Mollusca* which he has examined, the shell well developed, even before the development of the various organs of the embryo. With respect to the argument derived from the want of muscular attachment, he observed that the animal of *Carinaria* (to which he considered it probable that that of *Argonauta* is most nearly related), although firmly attached to the shell while living, separates from it with the greatest ease when preserved in spirits, being from its gelatinous nature very readily dissolved. These circumstances, he conceived, might fairly account for the animal of *Carinaria* having been, until very recently, unknown, and for that of *Argonauta* still remaining undiscovered.

November 11, 1834.

Dr. Marshall Hall, in the Chair.

A specimen was exhibited of a species of *Monacanthus*, Cuv., remarkable for having on each side of the body, about midway between the pectoral and caudal fins, a bundle of long and strong spines directed backwards. The species was figured in Willughby's 'Historia Piscium,' and a description of it by Lister is contained in the Appendix to that work; but it appears not to have been noticed by subsequent observers, and to have been altogether overlooked or rejected by systematic writers. Lister's specimen of the *Fish* was preserved in the collection of William Courten, the founder of the museum which became subsequently the property of Sir Hans Sloane, and eventually formed the basis of the British Museum: that brought under the notice of the Meeting belongs to the Museum of the Army Medical Department at Chatham, and was exhibited with the permission of Sir James Macgrigor. It was accompanied by a description by Staff-Surgeon Burton, which was read.

Monacanthus Hystrix. *Mon. lateribus in medio 6—7-spinosis, spinis validis longioribus.*

Guaperva Hystrix, *List., in Will. Hist. Pisc., App. p.* 21. *Tab. S.* 21.

"Length 7 inches. Colour black. Skin crowded with rough grains; a smooth spot behind the gills; towards the tail assuming the character of rhomboid scales, but the granular form continued over the caudal fin. On the sides, about one third of its length from the tail, is fixed a cluster of six or seven strong free spines from ¼ to 1 inch in length, capable of erection and depression.

"Dorsal spine very strong, about 1¼ inch long, subtriangular, with serrated edges, and grained, except towards the point: when not erected it is lodged in a deep groove on the back. Extremity of the *pelvis* salient, and terminating in two sharp short spines. Second dorsal fin broad and 2 inches long; anal similar, but shorter.

"In front of the eyes a small *fossa* covered with a membrane, except in its centre, where it is perforated by a minute olfactory *foramen*.

"Teeth in the upper jaw eight, the two middle incisors placed directly in front of the second pair, in a groove of which they are lodged, so that no part of these last are visible externally, except a small process at the cutting edge; the outer teeth trigonal. The teeth of the lower jaw differ materially from the generic character, their number being only four, of which the two middle ones are by far the largest in the mouth. On this account, and also on account of the nature of its covering,—which partakes of the granular character of that of *Monacanthus* and *Aluterus*, Cuv., and of the rhom-

boidal scales of *Balistes*, Ej.,—this fish might be regarded as the type of a distinct subgenus among the *Balistidæ*.

"The strong dorsal spine, the spinous processes of the pelvic bones, and the cluster of lateral spines, added to the tough indurated *epidermis* of this fish, form an armour excellently adapted for its protection against its more powerful enemies.

"It is an inhabitant of the Indian Ocean, frequenting the shores and coral reefs. The present specimen was brought from the Mauritius by Dr. Hibbert, Surgeon, 99th Regiment. This species is stated to be also found abundantly on the western coast of Australia, where it is known to the settlers by the name of "leather-jacket," —a denomination which is probably applied to it in common with other species of *Balistidæ*."

Mr. Gray exhibited a drawing of this specimen, and stated his intention of publishing a figure of it in the concluding Number of the 'Illustrations of Indian Zoology,' which is about to appear.

Mr. Gray called the attention of the Meeting to two new species of *Sturgeon*; one from China, of which he exhibited a specimen, and the other from the Mississippi, of which he showed a drawing taken from a specimen in the British Museum. The former species belongs to the same section of the genus with the *Acipenser glaber* of Marsigli, characterized by its conical muzzle, and the smooth and silvery nature of the skin between its 5 rows of plates. It was sent to England by Mr. John Russell Reeves, and is distinguished by the following characters:

Acipenser Sinensis. *Acip. lævis, supernè brunneus; rostro gracili, conico, acuto, mutico; fronte arcuato; scutis seriei dorsalis* 15—16, *radiatim sulcatis, altè carinatis, carinâ posticè unidentatâ, anterioribus gradatim minoribus, duobus ultimis ecarinatis; serierum lateralium brevioribus, carinâ posticè bidentatâ; caudâ supernè serie radiorum simplicium, ad latera squamis angustis tectâ.*

Hab. in Chinâ.

Scuta dorsalia 16; lateralia superiora 40—41, inferiora 13—14.

The other species was stated by Mr. Gray to belong to a new section intermediate between the true *Sturgeons* and the *Spatulariæ*, having a broad expanded muzzle, flat above, shelving on the sides, and concave, and furnished with a central ridge beneath.

Acipenser cataphractus. *Acip. brunneus, squamis parvis rugosis caudam versùs majoribus lævioribusque; rostro depresso apice spatulato, carinâ laterali occipiteque ad latera spinosis; scutis rugosis, acutè carinatis, carinâ posticè unidentatâ; vertebralibus posterioribus muticis, lateralibus posterioribus multo majoribus.*

Acipenser cataphractus. *Rapp, MSS.*

Hab. in fluvio Mississippi.

The beards are 4 in number; and the hinder part of the body elongated, slender, and depressed. The snout is composed of a large number of small long bones, radiately grooved, owing perhaps to the

youth of the specimen. It has a group of six recurved spines just behind the *apex*, and a series of small spines on the ridge which runs on each side from the *apex* to the anterior angle of the eye. There is also a small blunt spine on each side of the middle of the frontal region; and two others are placed on the bones over the hinder part of the gill-flap. The latter form the commencement of a series of carinated shields. The small scales are rough; and the shields forming the lateral lines are radiately grooved, and furnished with a sharp continued keel, terminating posteriorly in a spine. The larger plates on the hinder part of the body are smooth, with a few longitudinal ridges, and emarginate at the *apex*. There are 17 plates on the dorsal ridge, of which the third is the smallest; 47 or 49 in the upper lateral series, among which the anterior are much the smallest, their length increasing gradually as they approach the tail, and this increase being more marked after passing the ventral, and again after passing the anal, fins; and 15 or 16 in the lower lateral series.

The exhibition was resumed of the *Shells* collected by Mr. Cuming on the Western Coast of South America, and among the Islands of the South Pacific Ocean. Those exhibited at the Meeting were accompanied by characters by Mr. G. B. Sowerby, and comprehended the following apparently undescribed species of the

Genus Fissurella.

Fissurella maxima. *Fiss. testâ ovato-oblongâ, depressiusculâ, crassâ; intùs albâ, margine lato, undulato, pallescente fusco articulato; extùs radiatim sulcatâ, rugosâ, albido-cinerascente fusco radiatâ; aperturâ dorsali ovatâ: long.* 5, *lat.* 3·4 *poll.*

Hab. ad Valparaiso.

In the young shells the internal margin is proportionally broader than in those which are more fully grown: in some specimens this margin shows a very great development of crystalline structure.

Found on exposed rocks and under stones at low water.—G.B.S.

Fissurella grandis. *Fiss. testâ ovato-oblongâ, elevatiusculâ, posticè latiore, crassâ; intùs albâ, margine latiusculo, subundulato, cinerascente; extùs lævigatâ, purpureo-nigrâ, radiis numerosissimis saturatioribus; aperturâ dorsali majusculâ, oblongâ, extùs latiore, anticè subdeclivi: long.* 4, *lat.* 2·6 *poll.*

Hab. ad Valparaiso et ad Insulam Chiloe sub lapidibus littoralibus.—G. B. S.

Fissurella limbata. *Fiss. testâ ovato-oblongâ, depressiusculâ, posticè latiore, crassiusculâ; intùs albâ, margine latiusculo, subundato, pallescente, lineâ internâ purpureo-nigrâ; extùs lævigatâ, rosaceo-fuscescente, radiis rufescentibus; aperturâ dorsali elongatâ, mediane subcoarctatâ: long.* 3, *lat.* 1·9 *poll.*

Hab. ad Valparaiso.

In young shells the internal line of the margin is broader and more deeply coloured than in the more fully developed specimens. Nearly all the fully grown shells are so deeply eroded as to have lost almost

all traces of coloured rays. The younger shells, which retain the coloured rays, are found in exposed situations at low water.

A representation of the inside of this shell has been given in my 'Genera of Recent and Fossil Shells', under the name of *Fiss. picta*, Lam., from which it is nevertheless very distinct.

Found on exposed rocks.—G. B. S.

FISSURELLA BIRADIATA (Frembly MSS.). *Fiss. testâ ovatâ, anticè subacuminatâ, elevatiusculâ, crassiusculâ; intùs albâ, margine latiusculo, purpurascenti-fusco; extùs radiatim striatâ, purpurascenti-fuscâ, plerumque radiis duobus (utroque latere unico) pallescentibus; aperturâ dorsali oblongâ: long.* 3·8, *lat.* 2·7 *poll.*

Hab. ad Valparaiso sub lapidibus littoralibus.

In this, as well as in several others, the margin varies somewhat in width; it is, however, generally broader in the young shells. The fully grown specimens sometimes lose the two light-coloured rays.

Found also at Iquiqui in Peru.—G. B. S.

FISSURELLA LATA. *Fiss. testâ ovali, elevatiusculâ, crassiusculâ; intùs albâ, margine latiusculo, pallescente, rosaceo-maculato; extùs cinerascente, radiatim costellatâ, costellis subtuberculatis, radiis coloratis purpureo-rufis; aperturâ dorsali ovato-oblongâ: long.* 3·3, *lat.* 2·5 *poll.*

Hab. ad Insulam S. Mariæ, Chilensis.

This species approaches, in form and colouring, very nearly to *Fiss. picta*, Lam.

Found in exposed places.—G. B. S.

FISSURELLA PULCHRA. *Fiss. testâ ovato-oblongâ, depressâ, anticè angustiore, crassiusculâ; intùs albâ, margine latiusculo, subundulato, purpurascenti-fusco; extùs purpureo-cinerascente, radiis rufo-purpureis maculisque albis et violaceis concinnè pictâ; aperturâ dorsali centrali, posticè inclinatâ: long.* 2·5, *lat.* 1·6 *poll.*

Hab. ad Valparaiso.

OBS. Testa junior radiatim subcostellata.

Variat testâ totâ extùs purpurascenti-fuscâ, unicolore.

Found on the rocks.—G. B. S.

FISSURELLA ORIENS. *Fiss. testâ ovato-oblongâ, depressâ, crassiusculâ; intùs albâ, margine angustiore, plerumque pallescente; extùs pallidâ fusco nigro vel roseo radiatâ; aperturâ dorsali oblongâ, medianè latiore: long.* 2·7, *lat.* 1·6 *poll.*

Hab. ad Insulam Chiloe sub lapidibus littoralibus.

Variat testâ extùs obsoletè pictâ, margine interno paullò latiore. *Hab.* ad Valparaiso, rupibus adhærens.—G. B. S.

FISSURELLA CHILENSIS. *Fiss. testâ ellipticâ, depressâ, radiatim costellatâ, costellis rugosis; intùs albâ, margine lato, pallescente, nonnunquam fusco maculato; extùs cinerascente, radiis fuscis pallidis plerumque pictâ; aperturâ dorsali oblongâ, subcentrali: long.* 2·4, *lat.* 1·8 *poll.*

Hab. ad Valparaiso.

Found on rocks in exposed situations at low water.—G. B. S.

Fissurella obscura. *Fiss. testâ ovato-oblongâ, radiatim costatâ, costellis obtusis, latiusculis; intùs virescente, margine undulato, crenulato, pallidiore; extùs coloribus variis radiatim pictâ, punctis nigris nonnullis prope aperturam dorsalem radiantibus; aperturâ dorsali subelongatâ, mediânè latiore, rimâ internâ rufo marginatâ: long.* 1·1, *lat.* 0·7 *poll.*

Hab. ad Insulas Gallapagos sub lapidibus littoralibus.—G. B. S.

Fissurella virescens. *Fiss. testâ ovatâ, elevatiusculâ, radiatim costatâ et striatâ; intùs virescente, margine pallidiore, undulato et crenulato; extùs pallidè virescente fusco-virescente obscurè radiatâ, margine costellis crenato; aperturâ dorsali oblongâ, extùs utrinque coarctatâ: long.* 1·8, *lat.* 1·4 *poll.*

Hab. ad Panamam.

Found in exposed situations at low water.—G. B. S.

Fissurella nigropunctata. *Fiss. testâ ovatâ, elevatiusculâ, anticè angustiore, costellato-radiatâ; intùs virescente, margine pallidiore, crenulato, nigro punctato; extùs pallidè virescente, punctulis elongatis nigris confertim digestis radiatâ; aperturâ dorsali oblongâ, lateribus extùs subconnatis: long.* 1·6, *lat.* 1·1 *poll.*

Hab. ad Insulas Gallapagos.

Variat testâ intùs albâ; rimâ aperturæ dorsalis nigro marginatâ.
Hab. ad Insulam Lobos sub lapidibus littoralibus.—G. B. S.

Fissurella macrotrema. *Fiss. testâ ovato-oblongâ, elevatiusculâ, anticè angustiore, radiatim striatâ; intùs virescente, margine nigro variegato; extùs plerumque virescente rufo fusco vel nigrescente radiatâ; aperturâ dorsali elongatâ, lateribus extùs coarctatis, utrinque unidentatis: long.* 1·4, *lat.* 0·9 *poll.*

Hab. ad Insulas Gallapagos.

Variat testâ extùs purpurascenti-nigrâ.
Hab. ad Insulas Gallapagos.

Variat etiam testâ extùs virescente, radiis rufescentibus obscuris.
Hab. ad Lambeyeque.

Variat iterum testâ extùs rosaceo-virescente, radiis rufis; aperturæ dorsalis margine interno roseo.
Hab. ad Insulam Lobos sub lapidibus littoralibus.—G. B. S.

Fissurella affinis, Gray. *Fiss. testâ ovato-oblongâ, elevatiusculâ, anticè angustiore, radiatim plùs minùsve muricatim striatâ, nonnunquam ferè lævigato-striatâ, plerumque purpurascenti-nigrâ; intùs albâ, margine angusto, nigricante; aperturâ dorsali parvâ, ovali: long.* 1·7, *lat.* 1·2 *poll.*

Hab. ad Insulas Mexillones et Lobos, et ad Iquiqui.

Variat testâ rufescenti-nigrâ.
Hab. ad Valparaiso.

Obs. Testæ juniores pallidæ, radiatim pictæ.—G. B. S.

Fissurella microtrema. *Fiss. testâ ovatâ, depressiusculâ, radiatim scabroso-striatâ; intùs virescente, margine angustissimo, nigricante; extùs fuscâ, obscurè subradiatim coloribus variis pictâ;*

aperturâ dorsali minimâ, margine limbi interni nigricante: long. 0·9, *lat.* 0·6 *poll.*

Hab. ad Real Llejos, Americæ Centralis.

The dorsal perforation in this species is so small, and the coloration so dark, that it is difficult at first sight to perceive that it is really a *Fissurella*.

Found under stones.—G. B. S.

FISSURELLA INÆQUALIS. *Fiss. testâ oblongâ, tenui, subdepressâ, latere antico brevi, postico longo; intùs albicante, margine albo nigroque vario, crenulato; extùs radiatim striatâ, concinnè decussatâ, olivaceâ albicante subradiatim variegatâ; aperturâ dorsali anticâ, oblongâ, utrinque bidentatâ: long.* 1·1, *lat.* 0·6 *poll.*

Hab. ad Guacomayo et ad Insulas Gallapagos sub lapidibus littoralibus.—G. B. S.

FISSURELLA PICA. *Fiss. testâ oblongâ, tenui, subdepressâ, latere antico brevi, postico longo; intùs albicante, margine crenulato; extùs radiatim striatâ, concinnè decussatâ, albâ olivaceo variegatâ; aperturâ dorsali anticâ, ellipticâ, ferè circulari, parvâ: long.* 1·, *lat.* 0·57 *poll.*

Hab. ad Sanctam Elenam et ad Insulas Gallapagos.

Variat testâ albicante, radiatim olivaceo fasciatâ.

Found on dead shells in from six to eight fathoms water.—G. B. S.

FISSURELLA CHEMNITZII. *Fiss. testâ ovato-oblongâ, depressiusculâ, crassiusculâ, lateribus subcompressis, extremitatibus levatis; intùs albâ, impressione musculari prope marginem conspicuâ; extùs radiatim subsulcatâ, subdecussatâ, pallescente roseo subradiatâ; aperturâ dorsali magnâ, ovali, rimâ internâ latâ: long.* 2·2, *lat.* 1·4 *poll.*

Hab.?

The only specimen I have ever seen of this species was in the Tankerville Collection, from which, after several vicissitudes, it has at length found its way to Mr. Cuming's.

This remarkable shell is represented by Martini (I. t. xi. f. 100), whose figure is cited by Lamarck as a representation of *Fiss. Græca*.—G. B. S.

FISSURELLA LATIMARGINATA. *Fiss. testâ ovato-oblongâ, depressâ, crassiusculâ, anticè angustiore; intùs albâ, margine lato rufescenti-nigro, crenulato; extùs radiatim creberrimè striatâ, rufescenti-nigrâ; aperturâ dorsali oblongâ: long.* 2·8, *lat.* 1·8 *poll.*

Hab. ad Valparaiso et ad Iquiqui.

Found on the rocks.—G. B. S.

FISSURELLA TRAPEZINA. *Fiss. testâ subtrapeziformi, rotundato-angulatâ, anticè angustiore, depressâ, extremitatibus levatis; intùs albâ, impressione musculari prope marginem remotâ, margine incrassato; extùs concentricè subsulcatâ, pallidâ fusco radiatâ; aperturâ dorsali magnâ, latâ, anticè latiore: long.* 0·95, *lat.* 0·8 *poll.*

Hab. ad Caput Bonæ Spei.

This exceedingly rare species has existed in our collections for many years.—G. B. S.

Fissurella æqualis. *Fiss. testâ oblongâ, depressâ, extremitatibus ferè æqualibus; intùs albâ, margine incrassato, impressione musculari prope marginem remotâ; extùs lævi, albicante fusco radiatâ, vel fuscâ albicante radiatâ; aperturâ dorsali magnâ, oblongâ, latâ: long.* 0·85, *lat.* 0·5 *poll.*

Hab. ad Sanctam Elenam.

Found on dead shells in from six to ten fathoms.—G. B. S.

Fissurella fulvescens. *Fiss. testâ oblongâ, depressâ, fulvescente, extremitate anticâ angustiore; intùs lacteâ, margine subincrassato, subreflexo; extùs lævigatâ, radiatim substriatâ et rufo pictâ; aperturâ oblongâ, lateribus obsoletè bidentatis: long.* 1·6, *lat.* 0·9 *poll.*

Hab. ad Valparaiso sub lapidibus littoralibus.—G. B. S.

Fissurella nigrita. *Fiss. testâ ovali, depressâ, lateribus subcompressis, extremitatibus levatis; intùs albâ, marginibus postico lateralibusque incrassatis; extùs nigrâ, radiatim striatâ; aperturâ dorsali magnâ, ovali, margine lævi, albo: long* 1', *lat.* 0·6 *poll.*

Hab. ?—G. B. S.

Fissurella aspera. *Fiss. testâ ovali, altiusculâ, asperâ, posticè longiore; intùs cinerascente, margine albo, crenulato, extùs costellis numerosis radiantibus decussatim muricatis; aperturâ dorsali circulari ante verticem elevatam positâ: long.* 1', *lat.* 0·8 *poll.*

Hab. ad Pacosmayo.—G. B. S.

Fissurella asperella. *Fiss. testâ ovali, depressiusculâ, asperellâ; intùs virescente, margine crenulato; extùs cinerascente, striis numerosis radiantibus, radiisque coloratis rufo-cinerascentibus; aperturâ dorsali oblongâ, dente utrinque extùs elevato: long.* 0·85, *lat.* 0·5 *poll.*

Hab. ad Insulam Lobos sub lapidibus littoralibus.—G. B. S.

Fissurella mutabilis. *Fiss. testâ ovato-oblongâ, coloribus variis plerumque subradiatim pictâ, altiusculâ, posticè longiore; intùs albâ, margine lævi; extùs radiatim striatâ; aperturâ dorsali ovato-elongatâ, medio plerumque latiore: long.* 1', *lat.* 0·55 *poll.*

Hab. ad Caput Bonæ Spei.

Many specimens of this species were among the late Mr. G. Humphreys' collections, labelled by him "Brazil? Thalacker."—G. B. S.

Fissurella Panamensis. *Fiss. testâ ellipticâ, elevatâ, decussatâ, posticè longiore; intùs lactescente, margine crenulato; extùs costellis radiantibus decussatis, plerumque muricatis, albicante cinerascenti-fusco variè pictâ; aperturâ dorsali minimâ, subovali: long.* 0·6, *lat.* 0·4 *poll.*

Hab. ad Panamam.

Found on dead shells in from six to ten fathoms.—G. B. S.

Fissurella Ruppellii. *Fiss. testâ oblongo-ovatâ, elevatâ, decussatâ, lateraliter subdepressâ, posticè longiore; intùs albâ, margine crenulato; extùs albicante, radiis plerumque nigris, nonnunquam viridescenti-nigris, concinnè pictâ, costis costellisque alternantibus submuricatis radiantibus ornatâ; aperturâ dorsali parvâ, ovatâ, posticè subquadratâ, anticè infra verticem positâ, intùs posticè depressione distinctâ: long.* 0·9, *lat.* 0·6 *poll.*

Hab. ad Insulam Nevis, *Capt. Powers*: in Sinu Arabico, *Rüppell.*

A specimen of this pretty species was lately obtained by Mr. Cuming from M. Rüppell. About twenty were in the collections of the late Mr. G. Humphreys.—G. B. S.

Fissurella Clypeus. *Fiss. testâ ovatâ, depressâ, crassiusculâ, pallescente fuscescenti-nigro radiatâ; intùs albâ, margine subcrenato, pallescente nigro articulato; extùs radiatim subcorrugatâ; aperturâ dorsali oblongâ: long.* 1·15, *lat.* 0·75 *poll.*

Hab. ad Sanctam Elenam.

A single specimen is in Mr. Cuming's Collection.—G. B. S.

Fissurella crenifera. *Fiss. testâ ovato-oblongâ, subdepressâ, posticè latiore, subquadratâ; intùs albâ, margine incrassato, crenato et crenulato; extùs radiatim costatâ et striatâ, radiatim variè pictâ, costis muricatis; aperturâ dorsali oblongâ, medianè subcoarctatâ, extùs dente duplicato laterali munitâ: long.* 0·6, *lat.* 0·3 *poll.*

Hab. ad Real Llejos sub lapidibus littoralibus.—G. B. S.

A Letter was read, addressed by Capt. P. P. King, R.N., Corr. Memb. Z.S., to W. J. Broderip, Esq., and dated New South Wales, April 13, 1834. It gave some account of the Oceanic Birds observed during the late voyage of the writer from Europe to New South Wales, and more particularly of those of the genus *Diomedea*, Linn.

"From the meridian of the island of Tristan d'Acunha to that of the island of St. Paul's, on about the parallel of 40° of south latitude, we were daily surrounded by a multitude of oceanic birds.—Of the *Petrel* tribe the *Cape Pigeon, Procellaria Capensis*, Linn., was most abundant; but the *Proc. vittata* (vel *cærulea*) frequently was observed; as was also a small black *Petrel* which I do not recollect to have before seen.

"Of the genus *Diomedea* the species which I regarded as the *spadicea, chlororhynchos* and *fuliginosa* of Authors, were the most remarkable. Near Tristan d'Acunha the first (*Diom. spadicea*) most abounded: between the Cape and the longitude of 30° East the second (*Diom. chlororhynchos*) became more numerous: and in the neighbourhood of St. Paul's their place was supplied by the *Diom. fuliginosa*. Where one species abounded, the others were only occasionally seen; from which it may be inferred that each species breeds in distinct haunts. Occasionally two or three varieties of the *Diom.*

exulans, Linn., the *large wandering Albatross*, attended the ship, but they rarely remained beyond the day. *Diom. exulans* varies very much in plumage; generally, however, the head, neck, back, and wings are more or less mottled grey, and the breast, *abdomen*, vent, and *uropygium* snowy white; the bill is horn-coloured and the feet yellow.—We saw a bird that might be referred to M. Lesson's *Diom. epomophora*, if that is really a distinct species.—Another of very large size was near us for two days, which, with the exception of the back of the wings and tips of the under side of the pen feathers and extremity of the tail being black, was of a snowy white colour."

Capt. P. P. King transmitted with his Letter characters and descriptions of three of the species of *Albatross* observed by him, including those which he regarded as the *Diomm. spadicea* and *chlororhynchos*; together with drawings of these two species. The descriptions were read, and the drawings exhibited. The former agree essentially with the descriptions from the same specimens, recently published in his 'Wanderings in New South Wales,' &c., by Mr. George Bennett, who was a fellow voyager with Capt. King. The reference of these to the species quoted is, however, provisional only, as they differ in some important particulars from the original descriptions of those species: it is therefore probable that they are rather to be viewed as indicating races hitherto unnoticed by zoologists.

Mr. George Daniell stated some facts that had fallen under his observation with reference to the habits and economy of two British species of *Bats*, the *Pipistrelle, Vespertilio Pipistrellus*, Geoffr., and the *Noctule, Vespertilio Noctula*, Schreb., dwelling more particularly on those connected with the feeding of the former, and with the period of gestation and mode of parturition of the latter.

With regard to the former species, he stated that in July 1833 he received five specimens, all of pregnant females, from Elvetham, in Hampshire. Many more were congregated together with them in the ruins of the barn in which they were taken, but all the rest escaped. They had been kept in a tin powder canister for several days, and on being turned loose into a common packing-case, with a few strips of deal nailed over it to form a cage, they exhibited much activity, progressing rapidly along the bottom of the box, ascending by the bars to the top, and then throwing themselves off as if endeavouring to fly. They ate flies when offered to them, seizing them with the greatest eagerness, and devouring them greedily, all of them congregating together at the end of the box at which they were fed, and crawling over, snapping at, and biting each other, at the same time uttering a grating kind of squeak. Cooked meat was next presented to them, and rejected; but raw beef was eaten by them with avidity, and with an evident preference for such pieces as had been moistened with water. This answered a double purpose: the weather being warm, numbers of *blue-bottle Flies, Musca vomitoria*, Linn., were attracted by the meat; and on approaching within range of the bat's wings were struck down by their action,

the animal itself falling at the same moment with all its membranes expanded, and cowering over the prostrate fly, with its head thrust under in order to secure its prey. When the head was again drawn forth, the membranes were immediately closed, and the fly was observed to be almost invariably taken by the head. Mastication appeared to be a laboured operation, consisting of a succession of eager bites or snaps, and the sucking process (if it may be so termed) by which the insect was drawn into the mouth being much assisted by the looseness of the lips. Several minutes were employed in devouring a large fly. In the first instance the flies were eaten entire; but Mr. Daniell afterwards observed detached wings in the bottom of the box. These, however, he never saw rejected, and he is inclined to think that they are generally swallowed. A slice of beef attached to the side of the box was found not only to save trouble in feeding, but also by attracting the flies to afford good sport in observing the animals obtain their own food by this new kind of bat-fowling. Their olfactory nerves appear to be very acutely sensible. When hanging by their posterior extremities, and attached to one of the bars in front of the cage, a small piece of beef placed at a little distance from their noses would remain unnoticed; but when a fly was placed in the same situation they would instantly begin snapping after it. The beef they would eat when hungry; but they never refused a fly. In the day-time they sometimes clustered together in a corner; but towards evening they became very lively, and gave rapid utterance to their harsh, grating notes. One of them died on the fifth day after they came into Mr. Daniell's possession; two on the fourteenth: the fourth survived until the eighteenth; and the fifth until the nineteenth day. Each was found to contain a single *fœtus*.

On the 16th of May, 1834, Mr. Daniell procured from Hertfordshire five specimens of the *Vespertilio Noctula*, four females and one male. The latter was exceedingly restless and savage, biting the females, and breaking his teeth against the wires of the cage, in his attempts to escape from his place of confinement. He rejected food and died on the 18th. Up to this time the remaining four continued sulky; but towards evening they ate a few small pieces of raw beef, in preference to flies, beetles, or gentles, all of which were offered to them: only one of them, however, fed kindly. On the 20th one died, and on the 22nd two others, each of which was found to be pregnant with a single *fœtus*. The survivor was tried with a variety of food, and evincing a decided preference for the hearts, livers, &c. of fowls, was fed constantly upon them for a month. In the course of this time large flies were frequently offered to her, but they were always rejected, although one or two *May Chafers*, *Melolontha vulgaris*, Fab., were partially eaten. In taking the food the wings were not thrown forward as in the *Pipistrelle*; and the food was seized with an action similar to that of a dog. The water that drained from the food was lapped, but the head was not raised in drinking, as Mr. Daniell had observed it to be in the *Pipistrelle*. The animal took considerable pains in cleaning herself, using the posterior ex-

tremities as a comb, parting the hair on either side from head to tail, and forming a straight line along the middle of the back. The membrane of the wings was cleaned by forcing the nose through the folds and thereby expanding them. Up to the 20th of June the animal fed freely, and at times voraciously, remaining during the day suspended by the posterior extremities at the top of the cage, and coming down in the evening to its food: the quantity eaten sometimes exceeded half an ounce, although the weight of the animal itself was no more than ten drachms. On the 23rd, Mr. Daniell, observing her to be very restless, was induced to watch her proceedings. The uneasiness was continued for upwards of an hour, the animal remaining during all this time in her usual attitude suspended by the posterior extremities. On a sudden she reversed her position, and attached herself by her anterior limbs to a cross wire of the cage, stretching her hind legs to their utmost extent, curving the tail upwards, and expanding the membrane interposed between it and the posterior extremities, so as to form a perfect nest-like cavity for the reception of the young. In a few moments the snout of the young one made its appearance, and in about five minutes the whole of its head was protruded. The female then struggled considerably until the extremities of the *radii* had passed, after which the young one by means of a lateral motion of its fore limbs relieved itself. It was born on its back, perfectly destitute of hair, and blind; and was attached by an umbilical cord of about two inches in length. The female then licked it clean, turning it over in its nest, and afterwards resuming her usual position, and placing the young in the membrane of her wing, proceeded to gnaw off the umbilical cord and eat the *placenta*. She next cleaned herself, and wrapped up the young so closely as to prevent any observation of the process of suckling. The time occupied in the birth was 17 minutes. At the time of its birth the young was larger than a new-born mouse, and its hind legs and claws were remarkably strong and serviceable, enabling it not only to cling to its dam, but also to the deal sides of the cage. On the 24th the animal took her food in the morning, and appeared very careful of her young, shifting it occasionally from side to side to suckle it, and folding it in the membranes of the tail and wings. On these occasions her usual position was reversed. In the evening she was found dead; but the young was still alive, and attached to the nipple, from which it was with some difficulty removed. It took milk from a sponge, was kept carefully wrapped up in flannel, and survived eight days, at the end of which period its eyes were not opened, and it had acquired very little hair. From these observations it is evident that the period of gestation in the *Noctule* exceeds thirty-eight days.

Mr. Daniell also exhibited skeletons of the male and female of the *Pipistrelle* and *Noctule Bats*, forming part of his own collection, for the purpose of pointing out a peculiarity in the female, connected, as he conceives, with the mode of parturition just described. This peculiarity consists of a prolongation of the *os calcis* along the mar-

gin of the membrane extended between the hinder extremities and the tail, of much greater length and strength in the female than in the male. By means of this process Mr. Daniell believes the female to be capable of giving greater tension to the pouch formed of that membrane for the reception of the young in the act of parturition.

November 25, 1834.

William Yarrell, Esq., in the Chair.

A Letter was read, addressed to the Secretary by Keith E. Abbott, Esq., and dated Trebizond, June 20, 1834. It referred to a collection of skins of *Birds* made by the writer in his immediate neighbourhood, and presented by him to the Society. The number of species contained in the collection is twenty, one only of which was comprised among those previously transmitted by Mr. Keith Abbott, and exhibited to the Society at its Meeting on June 24, 1834. Mr. Abbott states that he proposes to continue the collection of such zoological subjects as he can procure in the neighbourhood of Trebizond, for the purpose of transmitting them to the Society.

The *Bird-skins* presented by Mr. Keith Abbott were exhibited, and Mr. Gould, at the request of the Chairman, brought them severally under the notice of the Meeting, observing on each of them as regarded its geographical distribution. The exhibition was regarded as a continuation of that which took place on June 24, (page 50,) and comprised the following species not then enumerated, making in the whole fifty-three species observed in the vicinity of Trebizond.

Falco Tinnunculus, Linn. Inhabiting Europe generally, and the adjacent continents of Asia and Africa, but not America.

Otus vulgaris, Cuv. Inhabiting Europe generally, and found also in India and Africa.

Sylvia Rubecula, Linn. Mr. Gould has no recollection of having seen this familiar bird before, either from Asia or Africa.

Emberiza Cia, Linn. Inhabiting the southern provinces of Europe and the high lands of India. It does not visit England, nor has it been seen from Africa.

Alauda arvensis, Linn. Inhabiting Europe generally. Mr. Gould has no recollection of having seen it in collections either from India or Africa, but it doubtless inhabits the border lands of the latter continent as well as of Asia.

Corvus Monedula, Linn. This bird is principally confined to Europe: it does not occur in America. A species nearly allied inhabits India.

Picus medius, Linn. A common species in Norway, Sweden, and part of the central portions of Europe; but not hitherto observed in collections from India or Africa.

Ardea Garzetta, Linn. Inhabiting the southern portions of Europe: it is also found in India and Africa, but not in America. It was once common in England.

Scolopax major, Linn. Inhabiting Europe generally, but probably not America. Mr. Gould has not yet seen it from India.

Tringa variabilis. This bird is very generally dispersed, being

common both in America and Europe: Mr. Gould has also seen it from India and Africa. It breeds in England.

Charadrius Pluvialis, Linn. Inhabiting Europe and the adjoining portions of Africa and Asia, but not America.

Charadrius Himantopus, Linn. Inhabiting Europe, particularly the southern parts, and Asia and Africa, but not America; its place in the latter continent being filled by a species nearly allied to it. It occasionally visits England.

Anas Querquedula, Linn. Inhabiting India as well as Europe: common in the Himalayan range.

Anas Fuligula, Linn. Found in all temperate countries of the old continent, but not hitherto in America.

Clangula vulgaris, Flem. Though common in England during the winter, the proper locality of this bird is in the high northern latitudes. Mr. Gould has not previously seen a specimen from so southern a *habitat* as the present.

Mergus Albellus, Linn. Similarly circumstanced with the last; although apparently still more arctic, as it visits England only in severe winters.

Podiceps cristatus. Found in nearly all the temperate regions of the globe.

Mr. Gray exhibited a specimen of a *Reptile* from New South Wales, which he regarded as constituting the type of a new genus nearly related to *Bipes*, Latr. He characterized it under the name of

LIALIS.

Caput elongatum, fronte plano, squamis parvis subimbricatis vestitum: *irides* lineares, verticales: *aures* oblongæ, conspicuæ.

Corpus subcylindricum, attenuatum: squamis dorsalibus ovatis, convexis, lævibus; ventralium seriebus duabus intermediis majoribus.

Pedes duo, postici, obsoleti, acuti, ad basin 2—3-squamati.

Anus subposticus: *squamæ præanales* parvæ; *pori subanales* utrinque quatuor per paria dispositi.

This genus is very nearly allied to *Pygopus*, Merr., but may be readily distinguished from it by the characters above given. In *Pygopus* the head is short, more rounded in front, and covered with regular shields: the pupil is subcircular: the feet are broad, ovate, blunt, and covered with three rows of scales: the vent has five large oblong scales in front of it: and the subanal pores form a continuous series.

LIALIS BURTONIS. *Li. suprà pallidè cinerascenti-brunnea, nigro minutissimè punctata; subtùs pallidè cacaotico-brunnea; strigâ albâ utrinque a labio superiore supra oculos per nucham, alteráque latiore a labio superiore per latera ad caudæ apicem ductis.* Junior. *Strigis colli lateralibus obsoletis.*

OBS. Epidermide remotâ subalbida est strigis lactescentibus.

Hab. in "Novâ Cambriâ Australi." Dr. Mair.—Muss. Chatham et Brit.

The dotting on the upper surface is produced by two or three black points on each of the scales. The upper streak passes along the keels on each side of the face and terminates on the back of the neck. The lower streak separates the dark colour of the under, from the pale of the upper, surface, and is edged beneath along its whole extent by a narrow brown line; in its anterior portion it is brown above.

The scales are smooth, and marked with four slight lines. The front lower labial plate is rather larger, with one pair of small mental plates and an odd one behind it; there are four pairs of long trigonal arched scales on each side of the lower jaw, of which the anterior is small and the posterior the largest, each with a small linear scale at its outer tip, which is next the small, broad, low labial plates; the hinder ones having two or three series of broad low plates under them. The dorsal scales are margined. The superciliary plates are triangular, and of moderate size. The scales of the front of the muzzle are very small, with two odd ones behind them, and one in the middle between the nostrils. The eyes are circular, and surrounded by a series of small scales. Eyelids none?

Mr. Gray also exhibited a specimen of the *New Holland Ibis* of Dr. Latham, for the purpose of directing the attention of the Meeting to the spatulate form of the feathers of its neck; a form of feather which he believes not to have been previously recorded as occurring in any *Grallatorial Bird*. In this instance they are elongated, lanceolate, and bear some resemblance to straws. The specimen was obtained from the neighbourhood of Macquarrie River.

Mr. Gray subsequently exhibited adult specimens of the *Geoemyda spinosa* and *Emys platynota*, two species of *fresh-water Tortoise* recently described by him from young individuals at the Meetings of the Society on June 24 and August 26 (pages 54 and 99). He pointed out in detail the peculiarities of the adult animals and shells, which he is about to describe in his 'Synopsis of Indian Animals'; and demonstrated on the specimen of the former the existence of those characters on which he had founded the genus *Geoemyda*, and which he had previously had occasion to observe in *Ge. Spengleri* alone,—his knowledge of the animal of *Ge. spinosa* having at the time of his proposing the genus been limited to the figure published by Mr. Bell.

In the adult individual exhibited the *sternum* was concave; and Mr. Gray, in calling particular attention to this point, took occasion to remark on it as evidencing, in an additional character to those already adverted to by him, the affinity of *Geoemyda* to the *Land Tortoises*, that genus and the genus *Cistuda*, Say, being the only genera among the *Emydidæ* that possess the concavity of *sternum* which is common to most of the species of *Testudinidæ*.

A Paper was read "On *Nycteribia*, a genus of wingless *Insects*, by J. O. Westwood, Esq., F.L.S., &c."

The author commences by remarking on the existence of certain

groups of animals, generally limited in extent, which exhibit in their organization, with reference to the groups to which they naturally belong, such anomalies as have constantly proved a source of perplexity to the systematists who have endeavoured to assign to them their real place in the system of nature. In many instances the anomaly involves the transition from the structure of one group to that of the adjoining ones; such instances constituting the osculant groups of Mr. W. S. MacLeay in his 'Horæ Entomologicæ'. Of these osculant groups some exist between the great divisions of the animal kingdom; others among the classes of which each of these great divisions is composed; others again between the orders, the families, and the minor subdivisions. The genus *Nycteribia* is thus osculant not between the families or even the orders of a class, but between two of the classes themselves of the *Annulose* Sub-kingdom —the *Arachnida* and the *Haustellata*. It is remarkable, moreover, for being exclusively confined to a parasitic existence on that equally anomalous group, the *Chiroptera* among the *Mammalia*.

Notwithstanding the comparatively unattractive appearance of the insects of this genus, the singular peculiarities of their structure have drawn upon them the attention of Latreille, Hermann, Dr. Leach, M. Léon Dufour, and Mr. Curtis, who have severally contributed much to the general stock of information respecting them. But the minuteness of the objects themselves, their unfitness for accurate examination when dried and shrivelled as specimens usually are in cabinets, their comparative rarity, and other causes, have rendered the descriptions of those distinguished entomologists in some instances unsatisfactory; and it is with the view of fully elucidating the organization of the genus and of adding to its history such facts as he has been enabled to ascertain, that Mr. Westwood offers to the Society his account of *Nycteribia*, to which he adds a Synopsis of the whole of the species that have hitherto been observed, including the characters of several not hitherto described. He enumerates the sources from whence his materials have been derived; and then proceeds to describe in great detail the structure of a new species brought from Dukhun by Col. Sykes,—a species peculiarly adapted for the purpose, both on account of its comparatively large size, 2¼ lines in length, and of the fitness of the individuals for minute examination owing to their having been preserved in spirit. Of this species he has examined three individuals, all of which are females in different stages of gestation. From the *abdomen* of the one which was most advanced Mr. Westwood extracted without difficulty a hard organized white mass, nearly as large as the *abdomen* itself, of an oval form, with traces of five articulations on the sides of the body, and having at its broader end three small circular spots placed in a triangle, with two smaller ones seated at a greater distance from them. That this was the young of the *Nycteribia* in its *pupa* state cannot, he conceives, be doubted: and it may consequently be regarded as proved that these insects are pupiparous, as has indeed been conjectured from their evident connexion with the *Hippoboscidæ*.

The whole of the external organization of Col. Sykes's *Nycteribia*

is described by Mr. Westwood in the greatest detail, and with continual references to those portions of the descriptions published by his predecessors, which are either vague, or incorrect, or in which they are contradictory to each other. The principal points which he has endeavoured to elucidate, in addition to the transformations which these insects undergo, are the distinction of the sexes, and consequently the sexual characters and the different organization of the *abdomen* in the sexes; the structure of the mouth, *antennæ*, and eyes; the separation of the *metasternum* and the *abdomen*; the situation and construction of the spiracles; and the nature of the serrated organs between the base of the anterior and intermediate legs. The sexual distinctions appear especially to have been misunderstood, and the author takes great pains to explain them in each of the species respectively which he has been enabled satisfactorily to examine.

Mr. Westwood concludes his Paper by a Synopsis of the Species of the

Genus Nycteribia.

Nycteribia Sykesii. *Nyct. rufo-picea, thoracis tegumento dorsali abdomineque obscurè albicantibus; hoc tuberculis minutissimis nigris undique tecto tuberculis quatuor majoribus in quadrangulo centrali dispositis, segmentis (unico basali excepto) destituto, apiceque pilis rigidis ferrugineis elongatis obtecto; pedibus elongatis subcompressis paullò dilatatis, breviter setosis; femoribus magis ferrugineis, coxis anticis elongatis tibiisque apicem versus attenuatis; pectinibus thoracis elongatis; oculis e tuberculis quatuor compositis.* (♀)

Long. corp. lin. 2¼.—Species maxima.

Hab. in Indiâ Orientali.—In Mus. D. Sykes.

Nycteribia Hopei. *Nyct. abdomine concolore nitido, in medio obsoletè 5-articulato, ovato-conico-depresso, segmento ultimo conico-truncato, apice lateraliter setigero subtùs stylis duobus conico-elongatis inflexis armato.* (♂)

Long. corp. lin. 2.—Præcedenti valdè affinis, at minor. An illius mas?

Hab. in Indiâ Orientali, apud Bengaliam.—In Mus. D. Hope.

Nycteribia dubia. *Nyct. fusco-castanea, pedibus magis castaneis; coxis anticis elongato-conicis, femoribus tibiisque subcylindricis; thorace subtùs irregulariter rugoso; pectinibus thoracis lateralibus elongatis; abdomine* ("♀" *Latr.* ♂?) *ovato, 6-annulato, segmento postico conico-elongato posticè attenuato et truncato.*

Long. corp. circiter lin. 2., Latr.

Nycteribia Blainvillii, *Latr., in Nouv. Dict. d'Hist. Nat., tom.* xxiii. *nec Leach.*

Hab. in Insulâ Isle de France dictâ. Latr.—India?—In Mus. olim Latreille.

The alleged diversity of sex, the difference of *habitat*, and the nearly cylindrical legs, induce the belief that this species is distinct from the last, with which however it offers a close resemblance both specifically and sexually.

Nycteribia Blainvillii, Leach. *Nyct. "pedibus longis tenuibus femoribus tibiisque apicem versus gradatim attenuatis"; obscurè ochraceo-livida; abdomine (apice excepto) fusco, elongato-conico, depresso, segmentis sex apice setigeris, ultimo longiore subrotundato.* (♂)

Long. corp. lin. 1. (1¼ secundum Leach.) "Minor *Phthiridio Hermanni.*"—Leach.

Hab. in Insulâ Isle de France dictâ.—In Mus. Brit.

Nycteribia Roylii. *Nyct. obscurè nigra, pedibus fuscantibus elongatis vix compressis, coxis anticis brevibus; abdomine ovato-conico, depresso, 5-articulato, apice subtruncato, stylis duobus incurvis subtùs armato; capite compresso.* (♂)

Long. corp. lin. 1¼.

Hab. in Indiâ Orientali.—In Mus. D. Royle.

Nycteribia Dufourii. *Nyct. pedibus elongatis, coxis abbreviatis; oculis rotundatis sessilibus simplicibus; abdomine* ♀ *ovali, apice setigero, segmentis destituto, suprà paribus tribus serierum setarum brevium rigidarum instructo;* ♂ ? *oblongo, 6-articulato, apice subtùs stylis destituto?*

Long. corp. lin. 1¼ ♀. lin. 1. ♂?

Nyct. Vespertilionis, *Dufour, in Ann. des Sci. Nat., Avril* 1831, *pl.* 13. *fig.* 4.

Hab. in *Vespertilione murino* Galliæ.

Nycteribia pedicularia, Latr. *Nyct. fusca; corpore suprà pedibusque flavo-rufescentibus; thorace subtùs fusco-rufescente, lineâ longitudinali mediand nigrâ; pedibus longis arcuatis, coxis anticis brevibus subcylindricis, femoribus tibiisque valdè compressis ferè ellipticis; pectinibus lateralibus thoracis brevibus; abdomine setis rigidis armato.*

Nyct. Vespertilionis, *Latr., Gen. Crust., &c., vol.* iv. *p.* 364. *pl.* 15. *fig.* 11. *Id., in Nouv. Dict. d'Hist. Nat., tom.* xxiii.

Latreille's original name is restored to this species, it being considered as distinct from any of the others, with the exception perhaps of Hermann's *Nyct. Vespertilionis.*

Nycteribia vexata. *Nyct. pallidè ferruginea; pedibus elongatis, coxis anticis brevibus; abdomine* ♂ *8-articulato, testaceo, ovato-conico, apice subrotundato, subtùs stylis ad apicem duobus incurvis alteroque intermedio armato.*

Long. corp. lin. 1—1¼.—Specimen aliud (♂? siccitate contractum? vel ♀??) abdomine ad apicem emarginato à cl. Hermanno descriptum est.

Nyct. Vespertilionis, *Herm., Mem. Apt., pl.* 5. *f.* 1.

Hab. in *Vespertilione murino* Europæ.

The insect described by Hermann under the name of *Nyct. Vespertilionis* may be considered, without hesitation, as specifically distinct from our two British species, as well as from *Nyct. Dufourii*, in the structure of the male. It may possibly, however, be identical with *Nyct. pedicularia.*

Nycteribia Jenynsii. *Nyct. pallidè ochraceo-flavescens, setis pectinibusque thoracis et abdominis basi nigris; palpis longè setosis; oculis ocellatis, rotundatis, simplicibus; pedibus elongatis tenuibus, coxis anticis brevioribus, femoribus tibiisque paullò compressis; abdomine ovato, seriebus sex transversis setarum rigidarum (segmenta totidem indicantia) notato, segmento ultimo laminis duabus elongatis incurvis contiguis styloque carnoso intermedio subtùs terminato.* (♂)

Long. corp. lin. 1¼.

Hab. in Chinâ.—In. mus. nostr. Amicissimè communicavit Rev. Leonard Jenyns.

Nycteribia Latreillii, Leach. *Nyct. pallidè ochracea; pedibus perbrevibus, femoribus tibiisque valdè dilatatis setis obscuris elongatis, tarsorum articulo primo reliquis conjunctim vix longiore; thoracis pectore latiore et breviore; pectinibus thoracis unguibusque nigris; abdomine* ♂ *6-articulato, segmento ultimo longiore, conico-truncato, subtùs laminis duabus distantioribus elongatis incurvis et ad ventrem adpressis, styloque intermedio armato;* ♀ *ovali absque appendiculis, apice inciso, subtùs articulo basali distincto, seriebusque sex transversis setarum rigidarum instructo, segmenta? indicantibus.*

Long. corp. lin. ¼. (1¼ secundum Leach.)

Hab. in *Vespertilione murino* Angliæ.—In Muss. Brit., DD. Stephens, Jenyns et Curtis.

The references of this species to Linnæus and Olfers, given by Dr. Leach, must be considered as dubious. Frisch (vol. ii. pt. 5. pl. 5.) has represented an insect, which, from the shortness of the legs, may possibly be intended for this species. That it is not the species figured by Latreille in the 'Histoire Naturelle' and the 'Genera Crustaceorum,' (with which it is doubtfully considered as synonymous by Dr. Leach,) is evident from the length and slenderness of the legs in the figures contained in those works.

Nycteribia biarticulata. *Nyct. pallidè ochracea, abdomine obscuriore; pedibus elongatis dilatatis longè setosis, setâ unicâ ad basin tibiarum longissimâ, coxis anticis brevibus; abdomine* ♀ *quasi 2-articulato, segmento primo suprà longiùs producto, stylis duobus caudalibus elongatis cylindricis porrectis ad apicem longè setosis;* ♂ *6?-articulato subtùs ad apicem stylis duobus incurvis ad ventrem adpressis; thorace subtùs concolore.*

Long. corp. lin. 1¼. (2 secundum Leach.)

Phthiridium biarticulatum, *Herm., Mem. Apt., pl.* 6. *f.* 1. ♀

Phthiridium Hermanni, *Leach, Zool. Misc., vol.* iii. *pl.* 144. ♂. ♀.

Celeripes Vespertilionis, *Mont., in Linn. Trans., vol.* ix. *p.* 166.

Nycteribia Vespertilionis, *Mont., in Linn. Trans., vol.* ix. *t.* 3. *f.* 5 ♀.

Hab. in *Rhinolopho Ferro-equino* Angliæ, Germaniæ, Italiæ.—In Muss. Brit. et D. Stephens.

Obs. Species distinctissima, sectionem peculiarem in genere constituens.

Hermann's trivial name for this species has been restored, as well in justice to that author as with the view of obviating the confusion which has arisen from his chief description having been derived from a different species.

Mr. Westwood's Memoir was illustrated by numerous magnified figures of the different species and of the details of their external structure.

December 9, 1834.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of three species of the genus *Bulinus*, Lam., which were regarded by Mr. G. B. Sowerby as previously undescribed. He characterizes them as follows:

Bulinus leucostoma. *Bul. testâ ovatâ, ventricosâ, anticè latiore, posticè obtusâ; anfractibus quatuor, primis longitudinaliter subsulcatis, ultimo maximo, lævi, omnibus olivaceo-fuscis, suturâ pallidiore, crenulatâ; aperturâ oblongâ, posticè acuminatâ, peritremate reflexo, albo: long.* 2·6, *lat.* 1·4 *poll.*

Hab. in provinciâ Peruviæ Xagua dictâ. *D. Matthews.*—Mus. D. Miller.

Mr. Gray is of opinion that this is *Bul. granulosus* of M. Rang.

Bulinus badius. *Bul. testâ ovatâ, ventricosâ, posticè subacuminatâ; anfractibus quinque, rotundatis, longitudinaliter striatis, fulvescentibus fusco fasciatis, fasciis interruptis; umbilico minimo; aperturâ ovatâ, posticè subacuminatâ; peritremate tenui, acuto: long.* 1·, *lat.* 0·6 *poll.*

Hab. in provinciâ Peruviæ Xagua dictâ. *D. Matthews.*—Muss. DD. Miller, Cuming, et Sowerby.

Bulinus bicolor. *Bul. testâ oblongâ, posticè subacuminatâ, pallescente, fasciis interruptis fuscis; anfractibus quinque, subventricosis, ultimo majore; umbilico minimo; aperturâ subovatâ, posticè acuminatâ; peritremate tenui, subacuto: long.* 0·9, *lat.* 0·4 *poll.*

Hab. in provinciâ Peruviæ Xagua dictâ. *D. Matthews.*—Muss. DD. Miller, Cuming, et Sowerby.

The specimens were brought to England by Mr. Miller, to whom the Society is indebted for their exhibition.

The reading was concluded of a Paper entitled "Notes on the Natural History and Habits of the *Ornithorhynchus paradoxus*, Blum.," by Mr. George Bennett, Corr. Memb. Z. S.; in which the author gives a detailed account of his inquiries and researches on the subject in question, made in the Colony of New South Wales, and in the interior of New Holland, at the end of 1832 and commencement of 1833. He commences by a description of the external character of the animal, as observed by him in the living and recent state; from which it appears that the greater or less degree of nakedness of the under surface of the tail is dependent on age, and is probably a result of the mode in which that organ trails upon

the ground; that the colour of the upper mandible above, in an animal recently taken out of the water, is of a dull dirty greyish black covered with innumerable minute dots, and the under surface of the lower white in the younger specimens, and mottled in the more aged, while the inner surface of both is of a pale pink or flesh colour; that the eyes are brilliant, and light brown; and that the external orifices of the ears, which are with difficulty detected in dead specimens, are easily discoverable in the living, the animal exercising the faculty of opening and closing them at will. When recent, and especially when wet, the *Ornithorhynchus* has a peculiar fishy smell, proceeding probably from an oily secretion. It is used as food by the Natives, by whom it is called, at Bathurst and Goulburn Plains, and in the Yas, Murrumbidgee and Tumat countries, by the names of *Mallangong* or *Tambreet*. Mr. G. Bennett is inclined to regard the two species usually described in modern books as not differing sufficiently from each other to justify their separation, and he therefore retains the name of *Orn. paradoxus* given to the animal by Professor Blumenbach, the universal adoption of which renders it inexpedient in this instance to recur to the older name of *Platypus* imposed on it by Shaw. He remarks on the distortions to which the exceedingly loose integuments are liable in the hands of stuffers unacquainted with the characteristic features of the animal, and gives the general result of his measurements, in the recent state, of fifteen specimens shot and captured alive, as averaging in the males from 1 foot 7 to 1 foot 8 inches, and in the females from 1 foot 6 to 1 foot 7 inches, in total length. One male specimen, shot near the Murrumbidgee River, measured 1 foot 11¼ inches; and a female, shot in the afternoon of the same day in the same part of the river, measured only 1 foot 4 inches. In these specimens the relative proportions of the beak and tail were subject to considerable variation.

Mr. G. Bennett's observations were commenced on the 4th of October 1832, at Mundoona in the Murray County, on a part of the Yas River running through the estate of Mr. James Rose. The *Water-Moles* (as these animals are called by the Colonists,) chiefly frequent the open and tranquil parts of the stream, covered with aquatic plants, where the steep and shaded banks afford excellent situations for the excavation of their burrows. Such expanses of water are by the Colonists called "ponds." The animals may be readily recognised by their dark bodies just seen level with the surface, above which the head is slightly raised, and by the circles made in the water around them by their paddling action. On the slightest alarm they instantly disappear; and indeed they seldom remain longer on the surface than one or two minutes, but dive head foremost with an audible splash, reappearing, if not alarmed, a short distance from the spot at which they dived. Their action is so rapid, and their sense of danger so lively, that the mere act of levelling the gun is sufficient to cause their instant disappearance; and it is consequently only by watching them when diving, and levelling the piece in a direction towards the spot at which they seem likely to

reappear, that a fair shot at them can be obtained. A near shot is absolutely requisite; and when wounded they usually sink immediately, but quickly reappear on the surface.

A male specimen was shot, and brought out by the dog, on the following morning. In a few minutes it revived, and ran along the ground, instinctively endeavouring to regain the water, but did not survive more than twenty-five minutes. On this individual Mr. G. Bennett made various experiments, with the view of ascertaining the truth of the reports so extensively circulated of the injurious effects resulting from wounds inflicted by the spur. In no way, however, could he induce the animal to make use of its spurs as weapons of offence; although in its struggles to escape, his hands were slightly scratched by the hind claws, and even, in consequence of the position in which he held it, by the spur also. The result of several subsequent repetitions of the experiment with animals not in a wounded state was the same. The natives, too, never seem fearful of handling the male *Ornithorhynchus* alive.

On the evening of the same day a female was shot, which died almost immediately on being taken out of the water. In this specimen the mammary glands were scarcely observable on dissection; but the left *uterus* was found to contain three loose *ova* of the size of swan-shot. The right *uterus* was less enlarged, exhibited less vascularity, and contained no *ova*. Preparations of the generative organs of this individual, and of two other impregnated females which were subsequently obtained, were forwarded by the author to Mr. Owen, by whom they have been particularly described in the 'Philosophical Transactions' for 1834, p. 555.

The next day three other specimens were shot: a male and two females. In the former the *testes* were found not to be larger than very small peas, and the same fact was observed in a specimen afterwards shot in the Murrumbidgee; whereas in that first obtained, they were nearly of the size of pigeons' eggs. For this difference at the same season it seems difficult to account. The left *uterus* of one of the females was found to contain two *ova*, and that of the other a single *ovum*, of the size of buck-shot. As before, no *ova* were found in the right *uterus*.

On the morning of the 7th of October, Mr. G. Bennett proceeded, in company with a native, to the banks of the river to see the burrow of an *Ornithorhynchus*, from which the natives had taken the young during the previous summer. The burrow was situated on a steep part of the bank; and its entrance, concealed among the long grass and other plants, was distant rather more than a foot from the water's edge. Its whole extent was not laid open, the natives contenting themselves with digging down upon it at stated distances, their operations being guided by the introduction into the burrow of a stick which indicated its direction. It took a serpentine course, and measured about twenty feet in length: the termination was broader than any other part, nearly oval in form, and strewed with dry river-weeds, &c. From this nest the native stated that he had taken in the previous season (December) three

young ones, about six or eight inches in length, and covered with hair. In addition to the entrance above spoken of, the burrows have usually a second below the surface of the water, communicating with the interior just within the upper aperture. After exhibiting this burrow, the native proceeded to explain the means employed in tracking the *Mallangongs*. He pointed out on the moist clay of the banks foot-marks leading to a burrow, from the bottom of which, on inserting his arm, he drew forth some lumps of clay, which bore evident marks of the animal's recent passage. He declared, however, that the inhabitant was absent, and Mr. G. Bennett was induced, by this information, to abstain from further investigation. A female specimen, shot in the evening of the same day, was found to have two *ova*, about the size of or rather smaller than buck-shot, in the left *uterus*; and in this, as in all the other female specimens, much difficulty was experienced in finding the mammary glands. The contents of the cheek-pouches and stomachs always consisted of river insects, very small shell-fish, &c., comminuted and mingled with mud or gravel, which latter, Mr. G. Bennett suggests, may be required to aid digestion. River-weeds were never observed to form part of the food; but Mr. George MacLeay informed the author that in a situation in which water-insects were very scarce he had shot *Ornithorhynchi* with river-weeds in their pouches.

Similar excursions were made on the 8th and 9th of October; and on the latter day one of the burrows was explored. The entrance of this burrow was situated on a moderately steep bank, abounding with long wiry grass and shrubs, at the distance of about five feet from the water's edge: its course lay in a serpentine direction up the bank, approaching nearer to the surface of the earth towards its termination. At this part it was expanded to form a chamber sufficiently capacious for the reception of the animal and her young, and measured one foot in length by six inches in breadth. Its whole length, from the entrance to the termination, was twenty feet; narrowing as it receded from the entrance, where it measured one foot three inches in depth, and one foot one inch in breadth, and in the intermediate part becoming scarcely larger than the usual breadth of the animal when uncontracted.

From this burrow a living female was taken, and placed in a cask, with grass, mud, water, &c.; and in this situation it soon became tranquil, and apparently reconciled to its confinement. Hoping that he had now obtained the means, should his captive prove to have been impregnated, of determining the character of the excluded product, Mr. G. Bennett set out on his return for Sidney, on the 13th of October, carrying the living *Ornithorhynchus* with him in a small box, covered with battens, between which only very narrow intervals were left.

The next morning, tying a long cord to its leg, he roused it and placed it on the bank of the river, in order to indulge it with a bathe; and a similar indulgence was granted to it on the second day of its journey. On these occasions it soon found its way into the water, and travelled up the stream, apparently delighting in those places

which abounded most with aquatic weeds. When diving in deep and clear water, its motions were distinctly seen: it sank speedily to the bottom, swam there for a short distance, and then rose again to the surface. It appeared, however, to prefer keeping close to the bank, occasionally thrusting its beak into the mud, from whence it evidently procured food, as on raising the head, after withdrawing the beak, the mandibles were seen in lateral motion, as is usual when the animal masticates. The motions of the mandibles were similar to those of a duck under the same circumstances. After feeding, it would lie sometimes on the grassy bank, and at others partly in and partly out of the water, combing and cleaning its coat with the claws of the hind feet. This process occupied a considerable time, and greatly improved its sleek and glossy appearance. After its second excursion it was replaced in the box, which was not opened again until the following morning, when it was found to have made its escape.

Although the summer season was now far advanced, Mr. G. Bennett determined to return to the interior and renew his investigations. On the 15th of November he again arrived at Mundoona, where he found that the river had fallen greatly, and sought in vain for the *Water-Moles* in the spots in which they had a few weeks before been so abundantly seen. Some burrows were also examined, but without success. On the 21st he proceeded to Gadarigby, on the Murrumbidgee, where his exertions were more successful, several specimens being obtained; but the only female shot was young and unimpregnated. On the 27th he returned to Mundoona, where a female had been shot the previous day, the uterine organs of which afforded evidence that the young had been just produced. The abdominal glands were large, but no milk could be expressed from them; the fur still covered the portion of integument on which its ducts terminated; and there was no appearance of projecting nipple. No such projection was observed in any of the specimens in which the secretion of milk was demonstrable. Two other females were procured at the same place; but both proved to be unimpregnated.

On the 8th of December Mr. G. Bennett quitted Mundoona for the banks of the Murrumbidgee, and near Jugiong, on the latter river, had an opportunity of inspecting the burrow of an *Ornithorhynchus*, containing three young ones, which appeared to have not long previously been brought forth. They were only thinly covered with hair and measured in length about 1¼ inch. No fragments of shells were observable in the burrow, nor anything that could lead to the supposition of the young having been excluded while yet in the egg. A want of spirit in which to preserve these interesting specimens unfortunately prevented their conveyance to Sidney.

On the 28th of December the author visited a part of the Wollondilly River, in the neighbourhood of Goulburn Plains, called by the Natives Koroa, in order to explore the burrow of an *Ornithorhynchus* which had there been discovered. The termination of this burrow was thirty-five feet from the entrance; and Mr. G. Bennett states

that burrows have been observed of even fifty feet in length. It was found to contain two young specimens, of the dimensions of 10 inches from the beak to the extremity of the tail. The nest consisted of dry river-weeds, the *epidermis* of reeds, and small dry fibrous roots, strewed over the floor of the terminal cavity. An old female was captured soon after on the banks of the river, in a ragged and wretched condition, which was conjectured to be the mother. But little milk could be pressed from her abdominal glands, as might have been expected in the parent of such well-grown young ones. She died at Mittagong, on the 1st of January, but the young ones survived until some time after their arrival in Sidney.

Mr. G. Bennett proceeds to describe in detail their habits in a state of captivity. Their various attitudes, when in a state of repose, are strikingly curious, and were illustrated by the exhibition of sketches made from the life. The young were allowed to run about the room; but the old one was so restless, and damaged the walls of the room so much by her attempts at burrowing, that it was found necessary to confine her to the box. During the day she would remain quiet, huddled up with her young ones; but at night she became very restless, and eager to escape. The little ones were as frolicsome as puppies, and apparently as fond of play: and many of their actions were not a little ludicrous. During the day they seemed to prefer a dark corner for repose, and generally resorted to the spot to which they had been accustomed, although they would change it on a sudden apparently from mere caprice. They did not appear to like deep water, but enjoyed exceedingly a bathe in shallow water, with a turf of grass placed in one corner of the pan: they seldom remained longer than ten or fifteen minutes in the water at one time. Though apparently nocturnal, or at least preferring the cool and dusky evening to the glare and heat of noon, their movements in this respect were so irregular as to furnish no grounds for a definite conclusion. They slept much, and it frequently happened that one slept while the other was running about, and this occurred at almost all periods of the day. They climbed with great readiness to the summit of a bookcase, placing their backs against the wall and their feet against the bookcase; and thus, by means of their strong cutaneous muscles and of their claws, mounting with much expedition to the top. Their food consisted of bread soaked in water, chopped egg, and meat minced very small; and they did not seem to prefer milk to water. One of the young ones died on the 29th of January 1833, and the other on the 2nd of February, having been kept alive in captivity for nearly five weeks.

December 23, 1834.

Lieut.-Col. Sykes in the Chair.

Drawings were exhibited of four *Fishes* of the River Quorra, made by Lieut. Allen, Corr. Memb. Z. S., from specimens obtained by him during his late voyage up that river into the interior of Africa. They exhibit the forms of *Lates*, Cuv.; *Mormyrus*, Ej.; *Sudis*, La Cép; and *Notopterus*, Ej.; and thus tend, in common with the specimens from the same expedition exhibited at the Meeting of the Society on June 10 (page 45), to illustrate the analogy borne by the *Fishes* of the rivers of Western Africa to those of the Nile.

A specimen was placed on the table of a *Toucan*, apparently hitherto undescribed, and forming part of the collection of N. C. Strickland, Esq., by whom it was communicated for exhibition.

Mr. Gould, at the request of the Chairman, pointed out its distinguishing characteristics. By its comparatively short bill, which is furrowed on the sides, and broad and flattened on the *culmen*, with the base of the under mandible extending obliquely beyond the line of the eye; by the shortness and roundness of its wings, of which the fourth quill-feather is the longest, the fifth, sixth, and seventh being nearly of the same length; and by the comparative shortness of the tail, which is less decidedly graduated than in the typical *Pteroglossi*; this bird agrees with the species described in Mr. Gould's 'Monograph of the *Ramphastidæ*,' as the *Pter. prasinus*, Licht., and *Pter. sulcatus*, Swains. With those species Mr. Gould proposes to associate it in a group, to be designated, on account of the grooved bills of the *Birds* comprised in it, *Aulacorhynchus*. From the other two species it is readily distinguishable by the white band nearly surrounding the base of its bill, and by the blood-red spot on the rump. The latter character affords the trivial name of the species, which may, for the present, be inserted in the account of the *Toucans* given by Mr. Gould at the Meeting of July 8, 1834, (page 78,) immediately before the *Pter. prasinus*, Licht.

PTER. HÆMATOPYGUS. *Pter. suprà subolivaceus, infrà cærulescenti-viridis, pectore saturatiore; uropygio coccineo; rectricibus quatuor intermediis brunneo apiculatis.*

Long. tot. 14 *poll.*; *rostri*, 2¼; *alæ*, 4¾; *caudæ*, 5½; *tarsi*, 1¼.

DESCR. Rostrum saturatè castaneum albo ad basin subcinctum. Orbitæ rubræ. Pedes olivaceo-brunnei. Sexus uterque, sicut in *Pter. prasino* et *Pter. sulcato*, similis.

The precise part of South America in which this bird was captured has not been ascertained.

Col. Sykes, when reading to the Society, in 1832, his Catalogue of the Birds of Dukhun, not having exhibited the nest and eggs of the *Lonchura Cheet*, and of that species of *Tailor-bird* which he denominated *Orthotomus Bennettii*, brought them under the notice of the Society on the present occasion.

The nest of the *Lonchura Cheet* is a perfect hollow ball, made of a delicate *Agrostis*, with a lateral hole for the entrance of the birds. It contained ten oblong minute white eggs, $\frac{1}{10}$ths of an inch long by $\frac{9}{70}$ths in diameter. It was found in the fork of a branch of the *Mimosa Arabica*.

The nest of the *Orthotomus Bennettii* was lodged in the cavity formed by sewing the edges of two leaves together: the nest itself also was attached to the leaves by threads passing through the leaf and the bottom of the nest, and there were appearances of the end of the thread being knotted outside. The nest is composed of very delicate fibres of *Indian Hemp* and grass. It contained two minute oblong crimson eggs, $\frac{3}{70}$ths of an inch long by $\frac{9}{70}$ths wide.

Col. Sykes also exhibited an egg of the *fluviatile Tortoise* of Dukhun, *Trionyx Indicus*, Gray. It is a perfect sphere, $1\frac{1}{10}$ inch in diameter: the calcareous shell is of a peculiar alabaster-like whiteness. He found seven eggs with shells in the oviducts, and twenty-seven without shells, nearly of the size of the preceding, in one specimen. He took occasion to mention that in the stomach and intestines of another specimen of *Trionyx*, he found not only the animals, but also angular fragments of considerable size of the shells of some scores of large *Uniones*.

A paper was read, entitled, "Description of some Species of *Chama*: by W. J. Broderip, Esq., Vice-President of the Geological and Zoological Societies, F.R.S., L.S., &c."

The author commences by remarking that the shells of the genus *Chama* appear to be subject to every change of shape and often of colour which the accidents of their locality may bring upon them, and that the distinction of the species must consequently be difficult, on account of their infinite variety. He then proceeds to describe those brought home by Mr. Cuming, and now in that gentleman's cabinet. The *Shells* referred to were exhibited in illustration of the characters and descriptions.

CHAMA FRONDOSA. *Chama testâ sublobatâ, lamellosâ, lamellis sinuosis frondosis, longitudinaliter plicatis et in utrâque valvâ cardinem versus biseriatis, maximis; intùs albidâ, limbo purpurascente, crenulato.*

Hab. ad Insulam Platam Columbiæ Occidentalis.

The ground colour of this beautiful *Chama* is a light pinkish purple, and the luxuriant and spreading longitudinally plaited foliations are yellow tinged and streaked with the ground colour. At the root of each foliation, on its lower side, there is generally a purplish transverse stripe.

It was dredged up from a rock of coral, to which it was adhering, at a depth of seventeen fathoms.

Var. a. *Testâ lamellis crebrioribus, frondibus brevioribus.*

Hab. cum præcedente.

Var. b. *Testâ totâ purpureâ, lamellis creberrimis, frondibus brevissimis.*

Hab. ad Mexico. (Gulf of Tehuantepec.)

Dredged up from sandy mud attached to *Aviculæ* (*Meleagrinæ*, Lam., *Margaritæ*, Leach,) at a depth of ten fathoms.

CHAMA PELLUCIDA. *Chama testâ albâ roseo seu rubro fucatâ vel strigatâ, lamellis frequentibus, frondibus elongatis pellucidis; intùs albâ, limbo crenulato.*

Hab. ad Peruviam. (Iquiqui.)

Dredged up attached to stones, *Mytili*, and turbinated shells, at a depth varying from nine to eleven fathoms, from a bottom of coarse sand, and also found under stones at low water mark.

In old specimens the foliations and *lamellæ* are completely worn down, and the shell has somewhat of a crystalline appearance;—indeed it is always semitransparent.

CHAMA LOBATA. *Chama testâ albâ, lobatâ, subrhomboideâ, radiatim striatâ, lamellis creberrimis, fimbriatis, foliaceis, striatis; limbo interno crenato.*

Hab. ad Insulam Nevis.

Found attached to small stones and shells, at Nevis in the West Indies, in sandy mud, and at a depth ranging from four to ten fathoms.

CHAMA PACIFICA. *Chama testâ rubrâ purpureâ vel luteâ, lamellis creberrimis, foliis seu squamulis brevioribus interdum albidis; limbo interno crenato.*

Hab. in Oceano Pacifico. (Lord Hood's Island.—Pearl Islands.)

The infinite variety of this species in shape and colour defies description. In many points it agrees with Lamarck's *Chama florida*, but he describes the margin of that shell as entire, whereas the margin of *Chama Pacifica* is strongly crenated.

Mr. Cuming's specimens were obtained by diving. They were attached to *Aviculæ*, at a depth ranging from three to seven fathoms. Many shells of this species were brought to this country some years ago, from the Pearl Islands, by Mr. Samuel Stutchbury.

CHAMA IMBRICATA. *Chama testâ lamellosâ, squamis imbricatâ, albidâ purpureo-fusco variâ; valvâ superiore subdepressâ, sublobatâ, sinu ab umbone usque ad limbum currente; intùs albidâ, limbo integro, sæpissimè nigro-purpureo.*

Hab. in Oceano Pacifico. (Lord Hood's Island.—Pearl Islands.)

This grows to a large size, and was obtained by diving, attached to *Aviculæ*, at a depth ranging from three to seven fathoms. There is generally a purple spot at the tip of the *umbo* of the upper valve.

This species was also brought home in considerable numbers by Mr. Samuel Stutchbury from the Pearl Islands.

Var. a. *Testâ nanâ, castaneâ albo strigatâ, intùs albâ.*

Hab. ad Insulas Gallapagos.

The examination of an extensive series has led Mr. Broderip to the conclusion that this dwarf, and at first sight widely differing, shell, is only a variety of *Chama imbricata.* The purple-brown is changed into chestnut striped with white, and hardly any scales are to be found on its wrinkled surface, except the double series which crown the ridge on each side of the depressed line, and sometimes a series or two on the affixed valve. This depressed line is not nearly so well marked as it is in the large variety, but it is to be observed on most of the specimens: some are absolutely without imbrications.

This variety was found attached to rocks and stones at low water.

CHAMA PRODUCTA. *Chama testâ subpurpureâ, creberrimè lamellosâ, lamellis foliaceis, integris; valvâ inferiore enormiter productâ; limbo integro, purpureo.*

Hab. ad Mexico. (Gulf of Tehuantepec.)

The interior of the shell, which has something of the aspect of that of a *Gryphæa,* is white tinged with yellowish, and striped in the direction of the *lamellæ* with purple. The purple border on the smooth internal edge of the upper valve is of some width.

Dredged up from sandy mud at a depth of ten fathoms, attached to stones.

CHAMA CORRUGATA. *Chama testâ corrugatâ, rubro-purpureâ albo variâ; intùs atro-purpureâ, limbo integro.*

Hab. in Americâ Centrali. (Real Llejos.)

Found attached to stones at low water. All the specimens which Mr. Broderip had seen turn from right to left.

CHAMA ECHINATA. *Chama testâ albidâ purpureo variâ, spinis fornicatis echinatâ; intùs atro-purpureâ vel sub-rubrâ, limbo integro; dente cardinali rubro.*

Hab. in Americâ Centrali. (Puerto Portrero.)

The spines of this species, which are close set and well developed in youth, are entirely abraded in age, till nothing but corrugation is left externally. But as the animal advances in life the interior of the shell is richly painted, till in old age it arrives to an intensity of dark purple that it is hard to imitate with colours however rich. At this period the cardinal tooth becomes of the hue of the bone of the *red Coral* (*Isis nobilis*) used for ornamental purposes.

Found at low water attached to rocks.

CHAMA SPINOSA. *Chama testâ albâ interdum roseo vel purpureo umbonem versus valvæ superioris pictâ, spinis fornicatis creberrimis horridâ; intùs albâ, limbo integro.*

Hab. in Oceano Pacifico. (Lord Hood's Island.)

This pretty species was dredged up, attached to corals and *Aviculæ,* at a depth ranging from three to seven fathoms. The younger specimens are tinged towards the *umbo* of the upper valve with a delicate rose-colour. The *umbo* of the lower valve is often produced after the manner of that of *Chama unicornis,* Lam.

CHAMA SORDIDA. *Chama testâ albidâ subroseo varié vel totâ subrosea, creberrimè striatâ, hinc et hinc foliaceâ; intùs albâ, limbo crenulato.*

Hab. in America Centrali. (Isle of Cuña.)

This species, which varies much according to its age, but never appears to grow to a large size, was dredged up from a depth of eighteen fathoms, attached to rocks. Old specimens have the lower valve often very much produced.

A Note by Mr. George Bennett on the Nasal Gland of the *wandering Albatross, Diomedea exulans*, Linn., was read. It described in detail the gland situated in that bird above the orbit, as observed by the writer in 1832, and accorded with the account of it published by him in the Appendix to his 'Wanderings in New South Wales,' &c. It was illustrated by a drawing of his dissection of the head of an *Albatross*, made specially with the view of tracing the excretory duct of the gland, which he succeeded in doing for nearly two inches under the external plate of the upper mandible, in a direction towards the nostrils, but inclining slightly upwards, until he lost sight of it among the cellular substance of the bone. The writer notices the occurrence of a corresponding structure in other *Birds*, particularly among the *Natatores*, and refers to Müller for an account of the gland as it exists, in or near the orbit, in species of every order of *Aves*.

A specimen was exhibited of a *Kangaroo*, recently brought from New Holland, by Capt. Sir W. Edward Parry, R.N., and presented by him to the Society.

Mr. Bennett called the attention of the Meeting to it as representing a species not hitherto described, and distinguishable by its paler colour, which is generally of a slaty grey; by the whiteness of its tail throughout the greater part of the length of that organ; by the comparative length of the tail, which is here longer than the body, whereas in the ordinary *greater Kangaroo, Macropus major*, Shaw, it is shorter; by the comparative nakedness of the ears; by the great extent of the naked muzzle; and by a broad white stripe along each cheek. He stated it to be his intention to describe it in detail under the name of

MACROPUS PARRYI. *Macr. rhinario lato; auriculis elongatis nudiusculis; caudâ corpore sublongiore, pilis rigidis brevibus incumbentibus vestitâ: notæo griseo; gastræo pallido; fasciâ genarum, caudâque pro maximâ parte, albis, hâc ad apicem nigrâ.*

Long. tot. a rostro ad caudæ apicem 5 ped. 4 poll.; *capitis*, 6 poll.; *auriculæ*, 4; *tarsi postici*, ad unguis longioris apicem, 10½; *caudæ*, 2 ped. 6 poll.

In a Note from Sir Edward Parry, which was read, it is stated that the animal in question is known to the natives in the neighbourhood of Port Stephens (lat. 32° S.) by the name of *Wŏllăroo*. This individual had been in his possession in New South Wales for two years previously to his embarkation for England, and was allowed to

range about at perfect liberty. It set out every night after dusk into the bush to feed, returning generally about two o'clock in the morning. In addition to what it obtained on these excursions, it ate meat, bread, vegetables, &c. Occasionally, but rarely, it ventured out in the daytime to a considerable distance, in which case it would sometimes be chased back by strange dogs: these, however, it always outstripped by its superior swiftness, until it placed itself under the protection of the dogs of the house. It died, from the effects of an accident, almost immediately after its arrival in England.

Detailed Notes of its dissection by Mr. Owen were read. The structure of its principal *viscera* corresponds in general with that of the same organs in the *greater Kangaroo*, but there are some differences observable in the anatomy of the two species. The puckering of the stomach, which is occasioned in *Macr. major* by three longitudinal bands, one extending on each side from the *œsophagus* along the lesser curvature, and the third passing along the line from which the great *epiploon* is continued to the spleen and transverse *colon*, depends in *Macr. Parryi* on the lateral bands alone, there being no mesial one. The different segments of the intestinal canal bear the same relative proportion to each other in both species; but the length of the several segments, and consequently of the whole canal, is less as compared with that of the body in *Parry's* than in the *greater Kangaroo*,—a fact which is in direct accordance with the more mixed nature of the food in the former. The spleen in *Macr. Parryi* was deeply notched at its free trenchant margin; in *Macr. major* it appears to be always entire. The mesial *cul-de-sac* of the *vagina* did not extend quite so far down in *Macr. Parryi*, as it does in the better-known species.

In the stomach were found two hair-balls of an oval shape, not rounded as they generally are in the *Ruminants*, which are most obnoxious to these formations. One of them was 3, and the other 2 inches in the long diameter. They were entirely composed of the hairs of the animal, matted together and agglutinated by the mucus of the stomach. Mr. Owen remarks on the interest which attaches to this resemblance to the *Ruminating* tribes, to which the *Kangaroos* make so near an approach in the complexity and magnitude of the stomach, and the simplicity of the *cæcum* and *colon*. He states that he has "more than once observed the act of rumination in the *Kangaroos* preserved in the Vivarium of the Society. It does not take place while they are recumbent, but when they are erect upon the tripod of the hinder legs and tail. The abdominal muscles are in violent action for a few minutes; the head is a little depressed; and then the cud is chewed by a quick rotatory motion of the jaws. This act was more commonly noticed after physic had been given to the animals, which we may suppose to have interrupted the healthy digestive processes: it by no means takes place with the same frequency and regularity as in the true *Ruminants*."

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